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SHOSHONE
GRAZING ENVIRONMENTAL STATEMENT

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DEPARTMENT OF THE INTERIOR

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ENVIRONMENTAL STATEMENT

DES-79-21

PROPOSED LIVESTOCK GRAZING
MANAGEMENT PROGRAM
FOR THE
SHOSHONE GRAZING AREA

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Prepared by

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
IDAHO STATE OFFICE

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SUMMARY

(x) Draft   ( ) Final Environmental Statement

Department of the Interior, Bureau of Land Management

1. Type of Action: (x) Administrative   ( ) Legislative

2. Brief Description of Action: The Bureau of Land Management proposes to implement an improved livestock grazing management program on 574,148 acres of public lands in the Bennett Hills, Timmerman Hills, and Magic Planning Units of the Shoshone District in south-central Idaho. Proposed initial livestock use in the area would be 38,138 animal unit months (AUMs). The proposed action is to implement grazing systems employing principles of rest-rotation and deferred-rotation grazing, along with minor annual spring use. Forty-two allotments are proposed involving 112 operators. The proposed grazing systems would require 40 water developments, 32 miles of pipeline, 117 miles of fencing, approximately 2,100 acres of seeding, 1,200 acres of herbicide spraying, and 4,000 acres of prescribed burning.

3. Summary of Environmental Impacts: As a result of implementing the proposal the rate of runoff and erosion would decrease slightly; the quality and quantity of vegetation would increase; terrestrial wildlife habitat would improve, and numbers would increase; the majority of aquatic habitat would remain the same; and wilderness values would remain the same. Impacts would also include a slight decrease in both five-county income and average income to individual ranchers, the visual contrast would increase slightly as a result of range improvement construction, and known and unknown cultural resource sites would receive continued livestock trampling.

4. Alternatives Considered:

   a. No Change
   b. Discontinue Livestock Grazing
   c. Lower Level Stocking
   d. Maximum Rehabilitation
   e. Modified Proposal

5. Comments Have Been Requested From the Following: (See Chapter 9).

6. Date Statement Made Available to EPA and the Public:

   Draft: 4/20/79

   Final:

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CHAPTER I

DESCRIPTION OF THE PROPOSAL

SUMMARY OF THE PROPOSED ACTION

The Bureau of Land Management (BLM) proposes to modify the livestock grazing management on the Shoshone Environmental Statement (ES) Area. The area is within the Shoshone District situated in south-central Idaho. It includes approximately 574,000 acres of public land and involves 42 proposed allotments. The proposal is to continue authorized grazing but at an adjusted level as recommended by the resource management plan, which is called a Management Framework Plan (MFP). The grazing management proposed for each allotment would be designed to meet the objectives identified in the MFP. The response of each allotment to the applied grazing management would be monitored.

To improve resource management within the Shoshone ES Area, it is proposed to adjust the boundaries on 29 existing allotments. These allotments would be redivided to form fifteen allotments. Three presently unallotted tracts would be designated as new allotments, and 24 existing allotments would remain unchanged. The remainder of the ES Area would be unalloted for livestock grazing.

The inventoried grazing capacity of the ES Area is 53,900 animal unit months (AUMs); however, due to wildlife and other considerations, the proposed licensed use would be limited to 38,138 AUMs. This proposed licensed use would represent a 35 percent downward adjustment from 1972-1976 average licensed use (58,731 AUMs), and a 54 percent downward adjustment from active Federal grazing qualifications (83,120 AUMs). See Glossary for definition of terms.

Allocation of forage and the initial stocking rates proposed for each grazing allotment are consistent with the MFP and the data collected in the 1976-1977 soils/vegetation inventory. Intensive grazing management based on these initial stocking rates is proposed for each of the major allotments. These grazing systems would form the basis for new or revised Allotment Management Plans (AMPs). Limited grazing management that would be compatible with other resource values is proposed for a few small areas. The stocking rate for all allotments would not exceed the livestock grazing capacity, which is based on 60 percent of palatable perennial vegetation plus 20 percent of palatable annuals. Unallotted areas would be excluded from annual livestock grazing and dedicated to other uses such as wildlife habitat or recreation.

Range improvements necessary to implement the proposed grazing management program would include fences, water developments, cattleguards, stock trails, seedings, and brush control projects. Maintenance of existing improvements would also be accomplished.

Each of the components of the proposed action summarized above, including the setting of the ES Area, delineation of allotments, identification of management objectives, allocation of forage, determination of initial stocking rates, description and evaluation of grazing systems, proposed range improvements, and the additional funding and and manpower needed by the Shoshone District, are discussed in detail in the following sections of this chapter. The interrelationships of the proposed action to other facets of public land management are also discussed. Section headings are provided which correspond to each of the identified topics.

SETTING

The proposed management activities would take place in south-central Idaho within a portion of the Shoshone District which has been designated as the Shoshone ES Area (Figure 1-1). The area includes the Bennett Hills, Timmerman Hills, and Magic Planning Units. The boundaries of the ES Area and the included planning units are shown on Map 1-1.

The ES Area lies north of the towns of Richfield (population 296), Shoshone (1,150), Gooding (2,775), and Bliss (126), and south of Fairfield (401) and Picabo (50) (Idaho Almanac, State of Idaho 1977). The area is bounded by King Hill Creek on the west, U.S. Highway 20 on the north, Silver Creek and U.S. Highway 93 on the east, and the Snake River and various highways on the south. The ownership and acreage of the ES Area is summarized in Table 1-1 below. The 629,059 acres within allotment boundaries is comprised of approximately 5 percent private, 5 percent State, and 90 percent public land.

Elevation of the ES Area ranges from 2,700 feet near King Hill on the Snake River to 6,800 feet on Davis Mountain. The terrain is typified by rocky hills incised by perennial or intermittent stream channels. Barren lava flows cover portions of the area. The area lies in the sagebrush-steppe physiographic region and native vegetation consists of sagebrush-bunchgrass (Artemisia-Agropyron), but large areas have been seeded to crested wheatgrass (Agropyron cristatum and Agropyron desertorum). Cheatgrass (Bromus tectorum) has invaded and is abundant throughout most of the area. Precipitation averages from 7 to 14 inches annually.

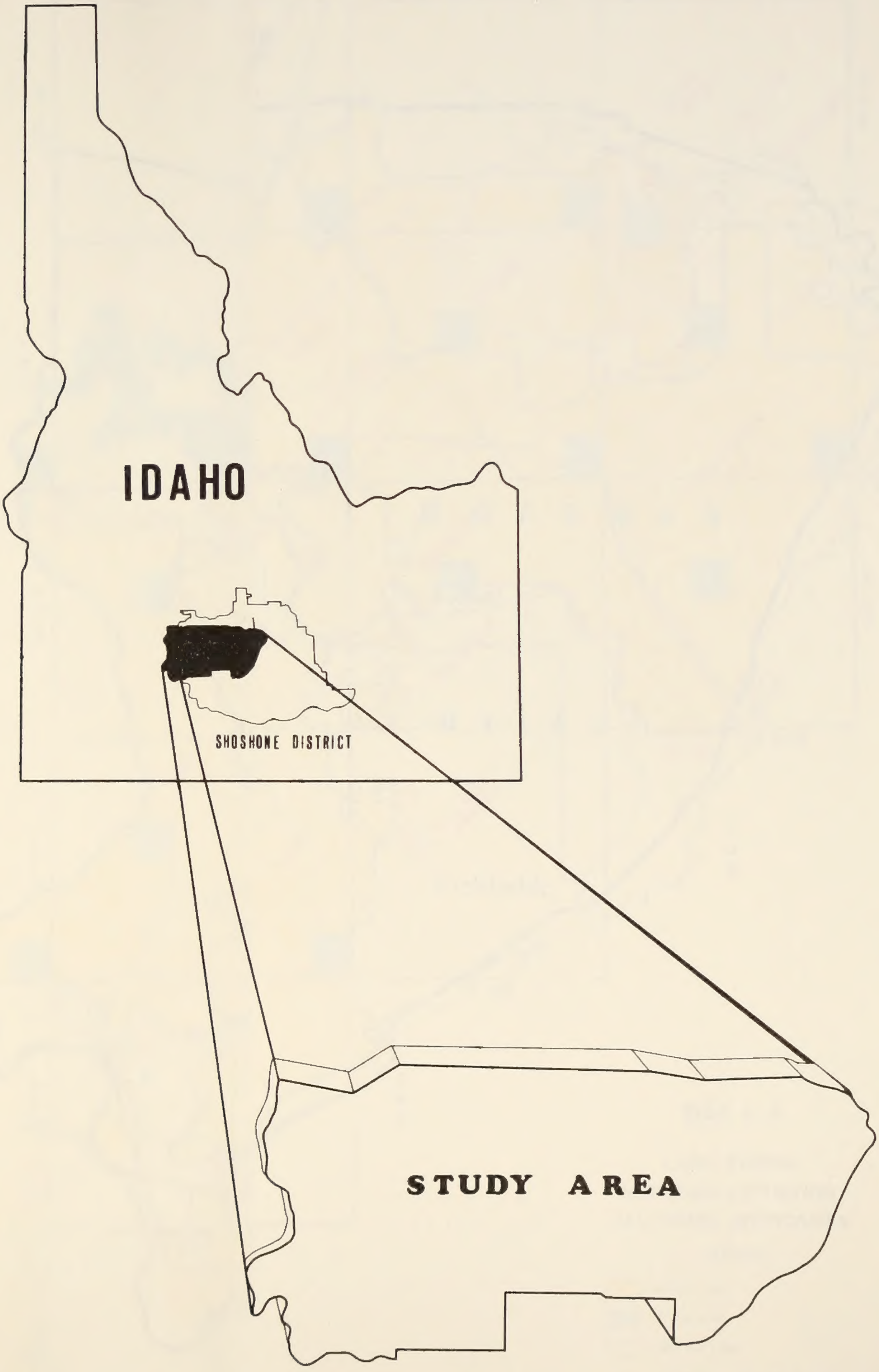
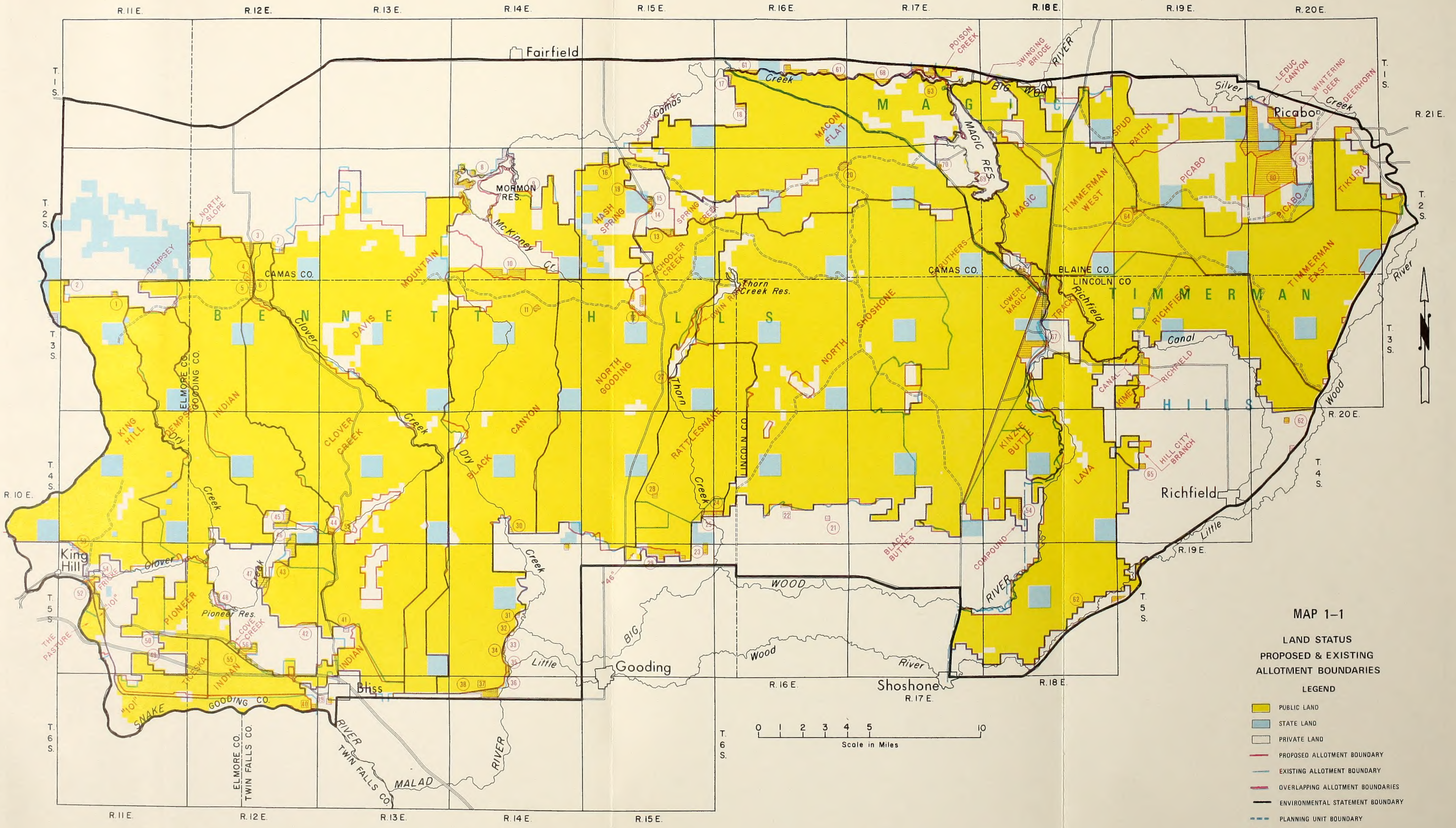


Figure I–I LOCATION OF ES AREA



MAP 1–1

LAND STATUS
PROPOSED & EXISTING
ALLOTMENT BOUNDARIES

TABLE 1-1

SHOSHONE ES AREA OWNERSHIP AND ACREAGE 1/

Public Land within Allotment Boundaries	564,630 acres
Proposed Unallotted Public Land	9,518
Subtotal	574,148
Private Land within Allotment Boundaries	32,947
Private Land outside Allotment Boundaries	267,731
Subtotal	300,678
State of Idaho Land within Allotment Boundaries	31,482
State of Idaho Land outside Allotment Boundaries	14,982
Subtotal	46,464
Grand Total	921,290 acres

1/ The ES Area includes some private and State lands not within proposed allotment boundaries (see Map 1-1).

PROPOSED ALLOTMENTS

The proposed allotments are shown in relation to the existing allotments on Map 1-1. The proposal would reduce the allotments from 53 to 42. The amount of public land included in the proposed allotments would vary from 49 to 93,628 acres (Table 1-2). A brief summary of proposed grazing management for each allotment is also shown in Table 1-2, including the classes of livestock to be grazed, the type of grazing systems to be implemented, the season in which grazing would be authorized, and the scheduled year for implementing the proposed grazing system. As shown, it is proposed to implement the grazing systems over the five-year period from 1980 to 1985 to ensure that the necessary range improvements can be completed.

Two of the listed allotments, Tikura and Poison Creek, are only partially within the ES Area. It is proposed that these portions be grazed only within their inventoried grazing capacity. No new grazing systems would be implemented until the total area in these allotments is assessed in the Sun Valley Grazing ES, scheduled for completion in 1981.

TABLE 1-2

PROPOSED ALLOTMENT ACREAGES AND CHANGES IN GRAZING MANAGEMENT

ALLOTMENT NAME	Public Land (Acres)	Private Land (Acres)	State Land (Acres)	Total (Acres)	Class of Livestock 1/		Grazing System 2/		Season of Use 3/		Proposed Year To Be Implemented 4/
					Present	Proposed	Present	Proposed	Present	Proposed	
Black Buttes	49			49	C	C	ASG	ASG	6/1-6/30	6/1-6/30	1980
Black Canyon	50,555	1,162	3,096	54,813	CHS	CHS	MRR-3	MRR-3	4/16-8/31	4/16-9/15	1983
Canal	511	22		533	C	C	ASG	RR-3 +DR-2	5/1-8/31	5/1-9/30	1980
Clover Creek	42,435	1,170	884	44,489	CHS	CHS	ASG	RR-4 +DR-2	4/1-6/15 +10/16012/31	4/1-6/30 +10/16-12/31	1981
Compound	457			457	C	C	ASG	RR-3	5/1-7/23	5/15-9/15	1983
Cove Creek	54	52		106	C	C	ASG	DUS	4/1-6/30	8/1-8/15	1980
Davis Mountain	39,030	6,706	3,465	49,201	CS	CS	MDR-3 +DUF +ASG	MRR-4 +DR-3 +DUF	4/1-12/15	4/20-722 +9/25-12/30	1984
Dempsey	20,014	50	1,424	21,488	CS	CS	RR-3 +ASG	RR-3	4/16-6/15 +10/16-12/15	5/1-6/30 +10/15-12/15	1983
Fricke	87	19		106	C	C	ASG	ASG	4/16-6/15	4/16-6/15	1985
Gwin Ranch	487	235		722	C	C	DUF	DR-2	7/1-7/31	6/1-9/30	1985
Hash Spring	5,746	1,611	1,526	8,883	CHS	CHS	ASG	MDR-2	5/25-10/31	5/25-10/31	1984
Hill City Branch	687	134		821	C	C	ASG	RR-3	4/15-8/1	5/1-9/30	1981
Indian	35,348	836	1,030	37,214	CHS	CHS	ASG	MDR-5	4/1-6/30 +10/16-12/15	4/1-6/30 +10/16-11/30	1983
Kime	600			600	C	C	ASG	RR-3	6/1-8/31	5/1-9/30	1980
King Hill	25,368	360	2,423	28,151	CS	CS	RR-3 +DR-2	RR-3 DUS	4/1-6/15 +11/1-12/15	5/1-6/30 +7/31-11/30	1980
Kinzie Butte	8,684	100	640	9,424	CS	CS	ASG	RR-4	4,16-7/20 +10/16-11/30	4,16-8/31 +10/16-11/30	1983
Lava	28,000	540	1,280	29,820	C	C	ASG	RR-3	4/16-9/30	5/1-9/30	1983
Lower Magic	263	2		265	C	C	ASG	DR-2	5/1-10/31	5/1-10/10	1981
Macon Flat	38,982	3,110	2,233	44,325	CS	CS	MRR-3	RR-3	5/1-6/15 +10/16-12/15	5/1-6/15	1980
Magic	6,052	149	640	6,841	C	C	DR-3	DR-3	4/16-8/15	4/16-8/15	1980
North Gooding	41,405	508	2,650	44,563	S	S	ASG	RR-3 +DR-2	4/16-6/15 +10/16-12/15	4/16-6/15 +10/16-12/15	1985
North Shoshone	93,628	2,007	4,670	100,305	CS	CS	MRR-3 +DR-2 +DUS +ASG	RR-3	4/16-11/30	4/16-9/30	1982
North Slope	661			661	CS	C	DUF	DUF	7/1-10/15	7/1-10/15	1980
Picabo	7,870	5,355	1,920	15,145	C	C	ASG	RR-3	4/16-6/30	5/1-8/31	1981
Pioneer	6,762	261		7,023	CH	C	ASG	RR-4	4/1-6/30 +7/1-4/10	4/16-9/15	1983
Poison Creek	269			269	S	S	ASG	ASG	5/1-11/10	5/1-11/30	1980
Rattlesnake	20,281	40	640	20,961	C	C	MRR-4 +ASG	RR-5	4/16-8/31	5/5-8/16	1983
Richfield Cattle	22,015		960	22,975	C	C	RR-4	RR-4	4/16-9/15	4/16-10/5	1980
Schooler Creek	58	252		310		C	DUD	DUS	11/3-11/18	7/21-11/9	1985
Spud Patch	3,894	1,208	640	5,742	C	C	ASG	DR-2	4/16-6/30	5/1-8/31	1981
Spring Creek	563	1,616		2,179	S	S	ASG	DR-2	5/15-11/30	5/15-11/30	1980
Springdale	310	475		785	C	C	ASG	ASG	5/1-7/31	5/1-7/23	1985
Struthers	2,392			2,392	C	C	ASG	RR-3	5/1-8/31	5/1-8/31	1980
Swinging Bridge	2,939	1,365		4,304	S	S	ASG	DR-2	4/16-6/15 +10/16-12/15	4/16-6/15 +10/16-12/15	1980
The Pasture	918	221		1,139	C	C	DUF +ASG	DR-2	4/1-8/31	5/16-7/3 +10/16-12/3	1985
Ticeska	3,891	266		4,157	C	C	ASG	RR-3	4/1-6/30	5/1-8/31	1983
Tikura	3,643	280		3,923	C	C	DR-2	DR-2	5/1-8/31	5/1-8/31	1980
Timmerman East	28,952	113	1,361	30,426	S	CS	ASG	MRR-4	4/16-6/15 +10/16-12/15	4/16-9/30 +10/16-12/15	1985
Timmerman West	14,450	808		15,258	S	S	ASG	DR-2 +ASG	4/16-6/15 +10/16-12/15	4/16-9/30 +10/16-12/15	1985
Track	1,974	50		2,024	C	C	RR-3	RR-3	5/1-8/15	5/1-8/15	1980
"46"	208	83		291	C	C	ASG	ASG	4/20-6/30	5/1-6/10	1980
"101"	4,138	1,781		5,919	C	C	ASG	DUD	4/1-6/30	11/1-2/28	1980
Total	564,630	32,947	31,482	629,059							

1/ C = Cattle, H = Horses, S = Sheep

2/ RR-3 Rest rotation with three treatments
RR-4 Rest rotation with four treatments
RR-5 Rest rotation with five treatments
MRR-3 Modified RR-3 characterized by limited (less than 25 percent of AUMs) sheep use in the "rest" treatment
MRR-4 Modified RR-4 characterized by limited (less than 25 percent of AUMs) sheep use in the "rest" treatment
DR-2 Deferred rotation with two treatments, one after seed ripe
DR-3 Deferred rotation with two treatments prior to and one later than seed ripe
MDR-2 Modified DR-2 with limited sheep use allowed in both treatments prior to seed ripe
MDR-5 Modified deferred rotation with five treatments specifically designed for a unique situation
DUF Deferred until after peak of flowering (June 20)
DUS Deferred until seed ripe time (July 20)
DUD Deferred until dormancy (August 20)
ASG Annual spring grazing, including all or a significant portion of use during critical growing season (prior to June 20)

Some allotments have two or more separate grazing systems, as indicated by the plus (+) signs. This is because several allotments have elevational differences and/or natural barriers that preclude grazing the entire allotment under one system. For a more detailed breakdown of grazing systems, see Table 1-7.

3/ The present or proposed seasons of use for some allotments are comprised of two distinct periods. In such cases the plus (+) signs indicate the later period.

4/ The proposed schedule of implementation is related to the proposed accomplishment of the essential range improvements. See Table 1-8 for proposed range improvement schedules.

UNALLOTTED AREAS

Seventy tracts of public land totaling 9,518 acres have been identified as proposed unallotted areas (Map 1-1). Of these, 52 tracts totaling 8,596 acres would not be considered for livestock grazing but rather would be set aside for other purposes. Fourteen tracts totaling 625 acres would be incorporated into proposed allotments sometime within the 15-year life of the proposal. These tracts are not considered essential for the implementation of the proposal and are presently fenced out of the existing allotments. The remaining four tracts, totaling 297 acres, would be used as stock trails, stock driveways, and holding fields. The proposed use and other descriptive information regarding the unallotted areas are presented in Table 1-3.

PURPOSE AND OBJECTIVES

The purpose of the proposed action is to meet certain objectives attainable through improved grazing management. The general objectives, as contained in the applicable MFPs, are: (1) to increase forage production to the estimated potential of the land; (2) to attain and perpetuate good range conditions; (3) to improve stability and reliability of available forage; (4) to protect and provide for the identified needs of threatened or endangered plants and animals; (5) to provide adequate forage for present and future numbers of big game animals; (6) to establish and/or maintain a diverse vegetation composition of shrubs, forbs, and grasses; (7) to improve the overall watershed conditions; and (8) to maintain the visual quality of the landscapes. In addition to the general MFP objectives listed above, specific objectives (summarized in Table 1-4) are proposed for each grazing allotment.

ALLOCATION OF FORAGE

Allocation of forage is the designation of part of the vegetation of a given area to a specific use. This ES considers the allocation of the total vegetation produced annually within the ES Area as well as the portion of that total that is available for livestock grazing.

TABLE 1-3
PROPOSED UNALLOTTED AREAS

Proposed Use	Map 1-1 Reference Numbers	Public Land (acres)	AUMs Produced	Fencing Required to Implement Proposal	
				Map Ref. No.	Length of Fence
Proposed for Disposal by Exchange or Public Sale	24, 46, 56, 62, 65, 70	826	86	None	
Proposed for Management Under Sikes Act	49, 57,	38	2	None	
Proposed for Protection of Cultural Resources	52	59	5	52	.25 mi.
Proposed for Protection and Enhancement of Terrestrial Wildlife Habitat 1/	1, 3, 7, 14, 16, 20, 21, 22, 22, 25, 26, 29, 30, 38, 40, 50, 58, 59, 60, 61, 64, 66, 67, 68.	5,892	495	1 38 30 14 16 22 68	.75 mi. 1.5 mi. .5 mi. .5 mi. .75 mi. .6 mi. 1.25 mi.
Proposed for Protection and Enhancement of Aquatic Wildlife and/or Riparian Vegetation	8, 28, 32, 33, 34, 36, 47, 48, 51, 53, 54, 55.	973	162	36 33 8 32 34 54 55 47 48	.4 mi. .3 mi. .2 mi. .2 mi. .3 mi. .4 mi. 1.3 mi. 1.4 mi. 1.0 mi.
Proposed for Protection and Stabilization of the Soil	5, 6, 11, 15	189	24	6 5	.5 mi. .3 mi.
Proposed for Recreation Access and Other Related Values	63, 69	161	21	None	
Proposed for Livestock Driveways	37	205	4	37	.8 mi.
Proposed for Livestock Holding Fields	4, 27	52	3	None	
Proposed for Livestock Trailing	39	40	2	None	
Proposed for Management as an Environmental Education Area	10	458	53	10	.8 mi.
Proposed for Future Combination with the Proposed Allotments	2, 9, 12, 13, 17, 18, 19, 31, 35, 41, 42, 43, 44, 45	625	88	45 35 31 9 19 13 18 17 2 12 42 43 44	3.25 mi. .4 mi. .3 mi. .8 mi. .75 mi. .6 mi. .75 mi. .75 mi. .5 mi. .2 mi. .1 mi. .5 mi. .5 mi.
Totals		9,518	945		32.0 mi.

1/ Three of these unallotted areas (Map Reference Numbers 58, 59, and 60) have been designated specifically to reserve a total of 386 AUMs of forage (310 AUMs Competitive) for wintering deer.

TABLE 1-4

SPECIFIC OBJECTIVES OF THE PROPOSED ACTION
FIFTEEN YEARS AFTER IMPLEMENTATION

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY 1/		VEGETATION COMPOSITION			VEGETATION CONDITION 3/			BIG GAME NUMBER AND FORAGE NEED						
	AUMS		SPECIES	PERCENT		CLASS	PERCENT		SPECIES	NUMBERS 4/		FORAGE NEEDS (AUMS) TOTAL 5/		FORAGE NEEDS (AUMS) COMPETITIVE 6/	
	PRESENT	GOAL 2/		PRESENT	GOAL		PRESENT	GOAL		PRESENT	GOAL	PRESENT	GOAL	PRESENT	GOAL
BLACK BUTTE	4	5/5	Bottlebrush	T	2	H.Dist.	41	--	None	None	None	None	None	None	None
			Squirreltail			Poor	59	100							
BLACK CANYON	3256	4770/4459	Crested wheatgrass			Seeding	8	8	Deer	20-R	70-R	129	325	106	272
			Deadhorse Area	5	15	Br. Cont.	2	-	Deer	45-MW	78-MW				
			Open Crossing Area	20	25	H. Dist.	7	5	Deer	50-MP	65-MP				
			Bluebunch wheatgrass			Poor	63	51	Elk	IU	25-R	IU	94	IU	94
			Untreated Areas	3	6	Fair	19	29	Ant.	IU	40-R	IU	60	IU	51
			Sprayed Areas	35	35	Good	1	7							
CANAL	47	80/80	Combination of:			Poor	22	16							
			Bluebunch wheatgrass	3	8	Fair	78	62	Deer	IU	IU	IU	IU	IU	IU
			Thurber needlegrass			Seeding	-	22							
			Bottlebrush Squirreltail												
CLOVER CREEK	2768	3497/3301	Crested wheatgrass	5	10	Seeding	6	8	Deer	25-R	88-R	138	368	115	310
			Sandberg bluegrass	5	10	H.Dist.	10	1	Deer	40-MW	70-MW				
			Nevada Bluegrass	10	20	Poor	35	38	Deer	50-MP	65-MP				
			Thurber needlegrass	10	20	Fair	44	48							
						Good	5	5							
COMPOUND	60	67/67	Bluebunch wheatgrass	3	10	Poor	100		None	None	None	None	None	None	None
						Fair		100							
COVE CREEK	4	5/5	Sandberg bluegrass	15	30	Poor	100	100	None	None	None	None	None	None	None
DAVIS MOUNTAIN	4283	5374/4310	Lower Pastures	3	7	Seeding	12	12	Deer	40-R	142-R	208	571	73	481
			Combination of:			Br.Cont.	3	-	Deer	50-MW	87-MW				
			Bluebunch wheatgrass			H.Dist.	4	-	Deer	100-MP	140-MP				
			Thurber needlegrass			Poor	28	15							
			Crested wheatgrass			Fair	48	66	Elk	IU	75-R	IU	656	IU	656
			Upper Pastures	7	13	Good	5	7							
			Combination of:												
			Idaho fescue												
			Bluebunch wheatgrass												
			Thurber needlegrass												
			Crested wheatgrass												
DEMPSEY	1380	1996/1822	High Pastures			Seeding	16	16	Deer	20-R	70-R	142	348	116	290
			Bluebunch wheatgrass	5	15	H. Dist.	22	9	Deer	55-MW	96-MW				
			Cedar Pasture			Poor	29	39	Deer	50-MP	65-MP				
			Bluebunch wheatgrass	3	6	Fair	27	24							
			Sandberg bluegrass	6	10	Good	6	12							
			Nevada bluegrass	6	10										
			Dead Pasture												
			Crested wheatgrass	5	15										
FRICKE	7	9/9	Sandberg bluegrass	19	30	H.Dist.	22		None	None	None	None	None	None	None
						Poor	78	100							
GWIN RANCH	64	67/59	Nevada bluegrass	7	10	Fair	100		Deer	3-R	6-R	5	10	5	8
			Bluebunch wheatgrass	4	6	Fair		100	Elk	8-MP	10-MP	5	10	5	10
HASH SPRING	852	973/527	Combination of:	12	20	Poor	6	6	Deer	20-R	70-R	73	173	61	151
			Bluebunch wheatgrass			Fair	33	32	Deer	150-MP	200-MP				
			Idaho fescue			Good	61	61	Elk	80-R	175-R	300	656	300	656
			Western needlegrass			Br. Cont.		1							
			Prairie junegrass												
			Combination of:	10	15										
			Tapertip hawksbeard												
			Agoseris												
			Butterweed Groundsel												
HILL CITY BRANCH	57	80/80	North Pasture			Poor	79	59	None	None	None	None	None	None	None
			Bluebunch wheatgrass	15	20	Fair	21	41							
			South Pasture												
			Bluebunch wheatgrass	1	8										
INDIAN	2691	3752/3584	Area A						Deer	20-R	70-R	132	330	108	276
			Bluebunch wheatgrass	28	35	Seeding	10	17	Deer	47-MW	82-MW				
			Thurber needlegrass	14	18	H. Dist.	16	1	Deer	50-MP	65-MP				
			Area B			Poor	30	35							
			Crested wheatgrass	22	30	Fair	36	35							
			Area C			Good	8	12							
			Sandberg bluegrass	17	25										
KIME	46	60/60	Bluebunch wheatgrass	5	5	Poor	59	59	None	None	None	None	None	None	None
						Fair	41	41							
KING HILL	1470	1895/1461	Bluebunch wheatgrass	5	15	Seeding	10	10	Deer	25-R	88-R	531	1080	430	864
			Thurber needlegrass	5	15	Poor	77	46	Deer	365-MW	637-MW				
			Sandberg bluegrass	15	35	Fair	9	40							
			Bottlebrush squirreltail	15	35	Good	4	4							
			Crested wheatgrass	50	50										

TABLE 1-4 Continued

SPECIFIC OBJECTIVES OF THE PROPOSED ACTION
FIFTEEN YEARS AFTER IMPLEMENTATION

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY 1/		VEGETATION COMPOSITION			VEGETATION CONDITION 3/			BIG GAME NUMBER AND FORAGE NEED						
	AUMS		SPECIES	PERCENT		CLASS	PERCENT		SPECIES	NUMBERS 4/		FORAGE NEEDS (AUMS) TOTAL 5/		FORAGE NEEDS (AUMS) COMPETITIVE 6/	
	PRESENT	GOAL 2/		PRESENT	GOAL		PRESENT	GOAL		PRESENT	GOAL	PRESENT	GOAL	PRESENT	GOAL
KINZIE BUTTE	901	1170/1147	Combination of:												
			Sandberg bluegrass &	10	20	Seeding	4	4	Deer	5-R	20-R	9	35	8	31
			Bottlebrush squirreltail			Poor	66	55							
						Fair	30	30							
			Crested wheatgrass	30	60	Br. Cont.		11							
LAVA	994	1559/1548	Combination of:			Poor	77	20	Deer	5-R	12-R	9	21	8	19
			Bluebunch wheatgrass	20	20	Fair	23	62							
			Thurber needlegrass			Br. Cont.		10							
			Bottlebrush squirreltail			Seeding		8							
LOWER MAGIC	52	66/66	Crested wheatgrass	70	80	Seeding	77	79	Deer	IU	IU	IU	IU	IU	IU
						Poor	23	21							
MACON FLAT	3367.	4414/4214	Combination of:	35	50	Poor	51	48	Deer	30-R	120-R	166	335	138	289
			Bluebunch wheatgrass			Fair	48	48	Deer	450-MP	500-MP				
			Bottlebrush squirreltail			Good	1	4	Elk	30-MP	18-MW	19	68	19	68
			Sandberg bluegrass												
MAGIC	800	879/852	Crested wheatgrass	50	50	Seeding	33	33	Deer	23-MW	40-MW	79	113	63	90
			Thurber needlegrass	20	20	Br. Cont.	30	30	Deer	200-MP	250-MP				
			Bluebunch wheatgrass	25	25	Poor	5	-	Ant.	5-R	5-R	8	8	7	7
						Fair	32	20							
						Good		17							
NORTH GOODING	5532	7175/6549	Bluebunch wheatgrass	7	12	Seeding	6	6	Deer	30-R	106-R	210	476	173	398
			Crested wheatgrass	1	6	Br. Cont.	7	7	Deer	20-MW	35-MW				
						Poor	30	23	Deer	250 MP	300-MP				
						Fair	39	26	Elk	60-MP	40-R	56	364	56	364
						Good	18	38	Ant.	10-R	17-MW	40	150	34	127
									Ant.	22-MW	35-R				
									Ant.		95-MW				
NORTH SHOSHONE	11,190	13,893/12,586	Bluebunch wheatgrass	6	11	Seeding	7	7	Deer	35-R	139-R	690	1425	558	1164
			Crested wheatgrass	6	11	Br. Cont.	18	--	Deer	468-MW	806-MW				
						H.Dist.	7	2	Elk	80-MW	70-R	155	837	155	837
						Poor	44	53	Ant.	10-R	83-MW	15	38	13	32
						Fair	21	35	Ant.		25-R				
						Good	3	3							
NORTH SLOPE	94	94/94	Bluebunch wheatgrass	34	34	Poor	5	5	Deer	IU	IU		IU	IU	IU
						Fair	35	35							
						Good	60	60							
PICABO	452	7/ 681/525	Bluebunch wheatgrass			Seeding	11	11	Deer	11-R	31-R	689	182	216	948
			On Loamy sites	2	10	Poor	67	61	Deer	523-MW	869-MW				
			On South Slopes	3	10	Fair	22	24	Ant.	10-R	10-R	15	15	13	13
			On North Slopes	14	19	Good		4							
PIONEER	688	983/983	Crested wheatgrass	3	20	Seeding	24	27	Deer	IU	IU		IU	IU	IU
						H.Dist.	17	2							
						Poor	59	71							
POISONCREEK	42	45/45	Bluebunch wheatgrass	7	7	Poor	100	100	Deer	IU	IU		IU	IU	IU
			Nevada bluegrass	5	5										
RATTLESNAKE	924	1372/697	Bluebunch wheatgrass	5	9	Seeding	2	2	Deer	25-R	99-R	411	877	322	719
			Antelope bitterbrush	1	5	H. Dist.	34	14	Deer	269-MW	464-MW				
						Poor	25	44	Elk	57-MP	15-R	71	326	71	326
						Fair	27	26	Ant.	12-R	30-R	18	45	15	38
						Good	12	14	Ant.		57-MW		45		38
RICHFIELD CATTLE	3067	3209/3165	Bluebunch wheatgrass	7	13	Br. Cont.	21	21	Deer	15-R	43-R	26	75	23	67
			On Untreated Areas			Poor	8	8	Ant.	10-R	10-R	15	15	13	13
			Bluebunch wheatgrass	45	45	Fair	71	71							
			On Sprayed Areas												
SCHOOLER CREEK	20	23/13	Combination of:			Fair	84	84	Deer	4-R	4-R	2	4	2	4
			Bluebunch wheatgrass			Good	16	16	Elk	2-R	4-R	8	16	8	16
			Idaho fescue	65	65										
			Thurbers needlegrass												
			Combination of:												
			Agoseris												
			Butterweed Groundsel	8	8										
			Tapertip hawksbeard												
SPUD PATCH	305	425/347	Bluebunch wheatgrass			Poor	80	55	Deer	1-R	5-R	25	115	20	98
			On North Slopes	6	12	Fair	20	39	Deer	17-MW	85-MW				
			On Loamy Sites	3	8	Good		6							
SPRING CREEK	90	100/93	Combination of:			Fair	100	100	Deer	4-R	8-R	7	14	6	13
			Bluebunch wheatgrass	40	40										
			Idaho fescue												
			Thurber needlegrass												
			Combination of:												
			Agoseris	25	25										
			Butterweed Groundsel												
			Tapertip hawksbeard												

TABLE 1-4 Continued

SPECIFIC OBJECTIVES OF THE PROPOSED ACTION
FIFTEEN YEARS AFTER IMPLEMENTATION

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY 1/		VEGETATION COMPOSITION			VEGETATION CONDITION 3/			BIG GAME NUMBER AND FORAGE NEED						
	AUMS		SPECIES	PERCENT		CLASS	PERCENT		SPECIES	NUMBERS 4/		FORAGE NEEDS (AUMS)			
												TOTAL 5/		COMPETITIVE 6/	
	PRESENT	GOAL 2/		PRESENT	GOAL		PRESENT	GOAL		PRESENT	GOAL	PRESENT	GOAL	PRESENT	GOAL
SPRINGDALE	39	42/42	Bluebunch wheatgrass	4	4	Seeding	6	6	Deer	IU	IU	IU	IU	IU	IU
			Idaho fescue	2	2	Fair	94	94							
STRUTHERS	166	220/216	Combination of:	10	15	Poor	100		Deer	3-R	6-R	5	10	5	9
			Bluebunch wheatgrass			Fair		100							
			Thurber needlegrass												
			Combination of:	5	10										
			Butterweed Groundsel												
			Agoseris												
SWINGING BRIDGE	383	415/410	Bluebunch wheatgrass	15	20	Poor	11		Deer	150-MP	200-MP	19	25	15	20
			Thurber needlegrass	2	5	Good	89	100							
THE PASTURE	72	83/83	Sandberg bluegrass	19	30	H.Dist.	83	76	Deer	IU	IU	IU	IU	IU	IU
						Poor	17	24							
TICESKA	498	652/652	Sandberg bluegrass	5	10	Seeding	12	46	Deer	IU	IU	IU	IU	IU	IU
			Crested wheatgrass	5	10	H.Dist.	80	--							
						Poor	8	54							
TIKURA	205	241/231	Bottlebrush squirrel-tail	T	2	Poor	100	79	Deer	150-MP	200-MP	38	50	30	40
						Fair		21							
TIMMERMAN EAST	1803	2328/2277	Poleline & Lincoln P.												
			Bluebunch wheatgrass	2	7	Poor	31	19	Deer	10-R	26-R	50	109	40	91
			Thurber needlegrass	5	11	Fair	69	81	Deer	15-MW	24-MW				
			Blaine & Sonners P.						Ant.	5-R	5-R	8	8	7	7
			Bluebunch wheatgrass	6	12										
			Thurber needlegrass	5	11										
TIMMERMAN WEST	1191	1582/1516	Bluebunch wheatgrass			Br. Cont.	9	9	Deer	5-R	17-R	113	194	91	157
			On Untreated Areas	13	21	Poor	7	7	Deer	38-MW	64-MW				
			On Sprayed Areas	47	47	Fair	22	22	Deer	200-MP	250-MP				
			In Well Pasture	21	21	Good	62	62	Ant.	5-R	5-R	8	8	7	7
			Thurber needlegrass	13	20										
TRACK	263	290/290	Bluebunch wheatgrass	20	20	Br. Cont.	58	58	Deer	IU	IU	IU	IU	IU	IU
						Fair	42	42							
"46"	14	17/17	Bottlebrush Squirreltail	T	2	H.Dist.	82	--	None	None	None	None	None	None	None
						Poor	18	100							
"101"	305	413/413	Crested wheatgrass	1	10	Seeding	27	27	Deer	IU	IU	IU	IU	IU	IU
						H. Dist.	9	5							
						Poor	64	68							
TOTAL FOR ALL ALLOTMENTS	50,446	65,154/ 58,161										4,647	11,651	3,455	10,146

1/ Livestock grazing capacity is total allocable forage less competitive wildlife AUMs (see footnote 6/ below).

2/ Two numbers appear. The first number represents livestock AUMs available if big game wildlife populations and their resultant competitive AUM demand remained at present levels. The second number represents livestock AUMs available if big game wildlife populations and their resultant competitive AUM demand increased to the levels shown in the columns entitled "Numbers" and "Competitive" goals under "Big Game Number and Forage Need."

3/ The following definitions were used in categorizing either artificaial treatment areas or condition classes:
Seeding The seeded species must make up at least 15 percent of the total dry matter production on the site.
Brush Control Sagebrush and/or rabbitbrush have been removed in the past by spraying or burning and have not encroached back onto the site in amounts found under fair range condition. Areas treated for release of native grass species have been given this designation.
Highly Disturbed (H.Dist.) This condition class represents an extreme departure from the potential natural plant community. This departure may be the result of one or more disturbing effects such as prolonged overuse by livestock, repeated burning, plowing, and/or seeding projects which have failed. In this condition class, there is a nearly complete lack of indicator species. Indicator species are those which would occur with the greatest frequency in the potential natural plant community. They may be either overstory or understory species.
Poor Condition In this condition class 0-25 percent of the present vegetation is composed of species which occur in the potential natural plant community. An exception to this percent limitation occurs when shrub species have increased far beyond the expected percent composition under climatic climax.
Fair Condition In this condition class 26-50 percent of the present vegetation is composed of species which occur in the potential natural plant community.
Good Condition In this condition class 51-75 percent of the present vegetation is composed of species which occur in the potential natural plant community.

4/ R-Resident; MW-Migratory Wintering; MP-Migratory Passing Through; IU-Incidental Use. Big game population numbers were agreed upon by the Idaho Department of Fish and Game and BLM.

5/ This column represents the total AUM requirement for the wildlife species indicated.

6/ This column represents wildlife AUMs that are competitive with livestock use. The difference between the total AUMs and competitive AUMs represents that forage consumed by wildlife but not normally eaten by livestock.

7/ These figures were arrived at using the same proportion of competitive deer AUMs from public and exchange-of-use land as was used for the proposed initial stocking rate. That proportion is 39.2 percent competitive deer AUMs from public land and 60.8 percent competitive deer AUMs from exchange-of use land. All 13 competitive antelope AUMs are from public land.

Inventoried Grazing Capacity

The grazing capacity for the ES Area is based on a vegetation inventory conducted during 1976 and supplemented in 1977. It includes 60 percent of palatable perennial plant growth and 20 percent of palatable annual growth, expressed in terms of animal unit months (AUMs), that occur on suitable areas. For this ES, palatable species are those listed in Table A1-1 in Appendix 1. An AUM is equal to 800 pounds of palatable forage, which is considered sufficient to feed one cow or five sheep for one month. Suitable areas are defined as those that produce at least 25 pounds of palatable forage per acre (32 acres per AUM), lie within 4 miles of livestock water, and do not exceed 50 percent slope.

In the methodology used in this ES in determining grazing capacity, all of the vegetation that is either unpalatable or located on unsuitable areas, as well as at least 40 percent of all palatable vegetation, has not been included in the inventoried grazing capacity. Suitable acres of public land and the inventoried grazing capacity by allotment are shown in Table 1-5. For further details regarding forage allocation procedures, refer to Appendix 1.

Big Game Forage Demand

For purposes of this ES forage for big game has been categorized as either "competitive" or "noncompetitive". "Competitive" forage could be allocated to livestock if there were no big game in the area. It is palatable to both big game and livestock (due to overlapping dietary preferences) and is found on areas considered to be suitable for livestock grazing. "Noncompetitive" forage is either unpalatable to livestock (e.g., big sagebrush), or unavailable to livestock because of its location on unsuitable land. Competitive and total (including noncompetitive) AUMs needed by big game are listed in Table 1-5.

Competitive AUMs proposed for allocation to big game were calculated by estimating the number of each species (deer, elk, and antelope) that presently use each allotment, multiplying the number of animals by the number of months spent in the allotment, by the estimated monthly forage consumed (200 lb/deer month, 500 lb/elk month, 150 lb/antelope month), and then deducting the estimated percentage of their diets comprised of species unpalatable to livestock, and further deducting the amount of wildlife forage provided on areas designated as unsuitable to livestock. The wildlife forage provided by unpalatable species and/or provided on unsuitable areas was identified as noncompetitive wildlife AUMs.

It is proposed to allocate competitive big game forage based upon the highest population numbers recorded during the years 1972-1976. This approach has been reviewed by the Idaho Department of Fish and Game and is supported by that agency. It is predicted that improving range conditions would provide adequate forage for in-

TABLE 1-5

PROPOSED ALLOCATION OF FORAGE BY ALLOTMENT

Allotment Name	Public Land	State & Private Use Areas	Suitable 1/ Public Lands	Inventoried Grazing Capacity (AUMs) 2/		Big Game Forage Demand (AUMs) 3/						Present Active Grazing Qualifications (AUMs)		1972-1976 Average Licensed Use (AUMs)		Proposed Initial Stock Rate (Livestock AUMs) 4/			
						Deer		Elk		Antelope						Federal		Private & State	
	(acres)	(acres)	(acres)	Public	St. & Pvt.	Comp.	Total	Comp.	Total	Comp.	Total	Federal	State & Pvt.	Federal	State & Pvt.	Maximum	Average	Maximum	Average
BLACK BUTTES	49	0	49	4	0	0	0	0	0	0	0	7	0	7	0	4	4	0	0
BLACK CANYON	50,555	4,258	44,776	3,362	362	106	129	0	0	0	0	5,287	417	4,354	417	2,283	2,217	264	242
CANAL	511	22	511	47	2	0	0	0	0	0	0	68	0	66	0	47	34	2	2
CLOVER CREEK	42,435	2,054	42,435	2,883	114	115	138	0	0	0	0	6,044	49	3,828	49	2,031	2,008	76	50
COMPOUND	457	0	457	60	0	0	0	0	0	0	0	83	0	83	0	60	40	0	0
COVE CREEK	54	52	54	4	4	0	0	0	0	0	0	12	12	10	10	4	4	4	4
DAVIS MOUNTAIN	39,030	10,171	35,436	4,356	1,231	73	208	0	0	0	0	5,215	0	3,371	0	4,063	4,075	1,209	1,164
DEMPSEY	20,014	1,474	15,312	1,496	107	116	142	0	0	0	0	3,768	133	2,617	133	1,116	920	102	73
FRICKE	87	19	87	7	2	0	0	0	0	0	0	15	0	17	19	7	7	2	2
GWIN RANCH	487	235	487	74	90	5	5	5	5	0	0	28	5	27	5	62	62	98	98
HASH SPRING	5,746	3,102	5,746	1,213	668	61	72	300	300	0	0	400	400	400	400	400	400	400	400
HILL CITY BRANCH	687	134	687	57	11	0	0	0	0	0	0	90	0	89	0	57	38	11	7
INDIAN	35,348	1,866	34,065	2,799	159	108	132	0	0	0	0	6,190	0	4,836	0	2,389	2,381	0	0
KIME	600	0	600	46	0	0	0	0	0	0	0	138	0	100	0	46	31	0	0
KING HILL	25,368	2,783	18,515	1,900	148	430	531	0	0	0	0	4,035	276	3,003	275	1,129	1,114	117	117
KINZIE BUTTE	8,684	740	8,684	909	74	8	9	0	0	0	0	1,612	0	1,326	0	720	676	64	48
LAVA	28,000	1,820	8,501	1,002	75	8	9	0	0	0	0	3,086	72	2,499	72	675	675	50	50
LOWER MAGIC	263	2	263	52	0	0	0	0	0	0	0	26	0	73	0	52	52	0	0
MACON FLAT	38,982	5,343	38,982	3,524	600	138	166	19	19	0	0	8,413	735	4,679	343	2,506	2,506	280	280
MAGIC	6,052	789	6,019	870	73	63	79	0	0	7	8	1,316	84	1,118	64	800	800	64	64
NORTH GOODING	41,405	3,158	39,968	5,795	639	173	210	56	56	34	40	3,750	116	2,344	107	3,750	3,750	529	344
NORTH SHOSHONE	93,628	6,677	83,772	11,916	1,089	558	690	155	155	13	15	17,423	1,946	11,913	1,973	7,329	7,329	728	728
NORTH SLOPE	661	0	621	94	0	0	0	0	0	0	0	122	0	122	0	94	94	0	0
PICABO	7,870	7,275	7,870	681	617	551	689	0	0	13	15	1,285	1,231	973	1,103	420	365	275	225
PIONEER	6,762	261	6,762	688	38	0	0	0	0	0	0	1,830	0	2,121	0	485	485	24	24
POISON CREEK	269	0	269	42	0	0	0	0	0	0	0	26	0	10	0	42	42	0	0
RATTLESNAKE	20,281	680	19,971	1,331	44	322	411	71	71	15	18	2,722	44	2,065	44	749	730	36	36
RICHFIELD CATTLE	22,015	960	22,015	3,103	90	23	26	0	0	13	15	1,959	120	2,293	135	2,346	2,346	90	90
SCHOOLER CREEK	58	252	58	30	111	2	2	8	8	0	0		0	17	63	20	20	111	111
SPUD PATCH	3,894	1,848	3,894	325	140	20	25	0	0	0	0	378	163	330	148	305	304	140	140
SPRING CREEK	563	1,616	563	96	527	6	7	0	0	0	0		0	0	0	90	90	527	527
SPRINGDALE	310	475	310	39	378	0	0	0	0	0	0	23	437	23	437	39	39	378	378
STRUTHERS	2,392	0	2,392	171	0	5	5	0	0	0	0	253	0	263	0	166	111	0	0
SWINGING BRIDGE	2,939	1,365	2,939	398	145	15	19	0	0	0	0	340	145	165	78	185	170	73	72
THE PASTURE	918	221	918	72	16	0	0	0	0	0	0	206	0	93	0	72	72	16	16
TICESKA	3,891	266	3,891	498	40	0	0	0	0	0	0	858	0	826	0	319	310	26	26
TIKURA	3,643	280	3,643	235	16	30	38	0	0	0	0	393	0	215	0	204	204	16	16
TIMMERMAN EAST	28,952	1,474	28,952	1,850	75	40	50	0	0	7	8	2,956	0	967	0	1,306	1,386	60	60
TIMMERMAN WEST	14,450	808	14,337	1,289	60	91	113	0	0	7	8	1,859	0	573	0	1,191	1,191	60	60
TRACK	1,974	50	1,974	263	11	0	0	0	0	0	0	295	0	308	0	176	176	8	8
"46"	208	83	208	14	6	0	0	0	0	0	0	25	10	25	10	14	14	6	6
"101"	4,138	1,781	4,138	305	108	0	0	0	0	0	0	584	370	579	869	305	305	108	108
TOTAL	564,630	64,394	516,131	53,900	7,878	3067	3906	614	614	109	127	83,120	7,271	58,731	5,954	38,138	37,487	5,954	5,576

1/ Suitable lands are those that are presently productive (at least 24 pounds/acre of forage), are less than 50 percent slope, and are located within four miles of available livestock water.

2/ Inventoried grazing capacity is based on 1976-1977 vegetation survey data. It includes 60 percent of palatable perennials and 20 percent of palatable annuals located on suitable areas.

3/ For an explanation of how big game forage demand was calculated, see "Big Game Forage Demand" section in the text.

4/ For some grazing systems the stocking rate would fluctuate from one year to another in order to match the grazing treatments to pastures of unequal grazing capacity. The maximum and average figures represent the stocking rate through a complete cycle of each grazing system.

creasing big game numbers. Prior to increasing allocations to livestock based upon greater forage production, current and future big game needs would be evaluated and, provided that such needs were compatible with future goals (Table 1-4), adequate forage would be reserved.

Livestock Initial Stocking Rate

The proposed initial stocking rate for this ES is the level of livestock grazing use that would actually be authorized. It was determined after considering total forage production, plant growth data, and competing uses. The proposal to adjust the authorized livestock grazing use to conform to the proposed initial stocking rate is the most fundamental and far-reaching aspect of the proposed action.

The initial stocking rate for each allotment was derived from the inventoried grazing capacity (see corresponding section above). In order to prevent overgrazing of any areas, the forage in rested pastures (not grazed by livestock) and the competitive forage for big game (as explained in the previous section) were subtracted from the inventoried grazing capacity to determine the livestock initial stocking rate. For further detail regarding the calculation of the initial stocking rate, see Appendix 1.

The proposed initial stocking rate for each allotment is shown on Table 1-6. Present active grazing qualifications, average licensed use, and the inventoried grazing capacity are also shown to allow direct comparison with the stocking rate. Other information on the table includes the percent adjustments needed to achieve the proposed initial stocking rate, the AUMs of forage needed for big game, and the percent of the grazing capacity to be allocated to big game and livestock combined.

GRAZING SYSTEMS

To improve range conditions in the ES Area, it is proposed to implement intensive grazing systems which are designed to maintain or improve key vegetation species through periodic grazing and resting of the range. The grazing systems proposed specify the number of AUMs allowable, class of livestock allowed to graze, the season(s) of use, and the schedule for grazing and resting the pastures in each allotment.

Any temporary deviations from the proposed grazing schedule would require approval by the BLM Area Manager after a careful evaluation of the range condition, requirements of the key plant species, wildlife needs, forage and water conditions, and the season

TABLE 1-6
PROPOSED ADJUSTMENTS IN GRAZING

ALLOTMENT NAME	FED. GRAZING QUALIF. (AUMS)	1972-1976 AVERAGE LICENSED USE (AUMs) 1/	1976-1977 INVENTORIED GRAZ. CAPACITY (AUMs) 2/	PROPOSED LIVESTOCK INITIAL STOCKING RATE (AUMs) 3/	PROPOSED REDUCTION		BIG GAME DEMAND ON PUBLIC LAND		PROPOSED LIVESTOCK AUMs PLUS COMPETITIVE WILDLIFE AUMs
					From Active Qual. (%)	From Average License (%)	COMP. (AUMs) 4/	TOTAL (AUMs)	
BLACK BUTTES	7	7	4	4	43	43	0	0	4
BLACK CANYON	5,287	4,354	3,362	2,283	57	46	106	129	2,389
CANAL	68	68	47	47	31	31	0	0	47
CLOVER CREEK	6,044	3,828	2,283	2,031	66	47	115	138	2,146
COMPOUND	83	83	60	60	28	28	0	0	60
COVE CREEK	12	10	4	4	67	60	0	0	4
DAVIS MOUNTAIN	5,215	3,371	4,356	4,063	22	20% inc.	73	208	4,136
DEMPSEY	3,768	2,617	1,496	1,116	70	57	116	147	1,232
FRICKE	15	17	7	7	53	59	0	0	7
GWIN RANCH	28	27	74	62	121% inc.	130% inc.	10	10	72
HASH SPRINGS	400	400	1,213	400	0	0	361	373	761
HILL CITY BRANCH	90	89	57	57	37	36	0	0	57
INDIAN	6,190	4,836	2,799	2,389	51	50	108	132	2,497
KIME	138	100	46	46	67	54	0	0	46
KING HILL	4,035	3,003	1,900	1,129	72	62	430	531	1,559
KINZIE BUTTE	1,612	1,326	909	720	55	46	8	8	728
LAVA	3,086	2,499	1,002	675	78	73	8	10	683
LOWER MAGIC	26	73	52	52	100 inc.	29	0	0	52
MACON FLAT	8,413	4,679	3,524	2,506	70	46	157	185	2,663
MAGIC	1,316	1,118	870	800	39	28	70	87	870
NORTH GOODING	3,750	2,344	5,795	3,750	0	60% inc.	263	306	4,013
NORTH SHOSHONE	17,423	11,913	11,916	7,329	58	38	726	860	8,055
NORTH SLOPE	122	122	94	94	23	23	0	0	94
PICABO	1,285	973	681	420	67	57	242	704	662
PIONEER	1,830	2,121	688	485	73	77	0	0	485
POISON CREEK	26	10	42	42	61% inc.	320% inc.	0	0	42
RATTLESNAKE	2,722	2,065	1,331	749	72	64	408	500	1,157
RICHFIELD CATTLE	1,959	2,293	3,103	2,346	20 inc.	2% inc.	36	41	2,382
SCHOOLER CREEK 5/		17	30	20		18% inc.	10	10	30
SPUD PATCH	378	330	325	305	19	7	20	25	325
SPRING CREEK 6/			96	90			6	7	96
SPRINGDALE	23	23	39	39	70% inc.	70% inc.	0	0	39
STRUTHERS	253	263	171	166	34	37	5	5	171
SWINGING BRIDGE	340	166	398	185	46	11% inc.	15	19	200
THE PASTURE	206	93	72	72	65	23	0	0	72
TICESKA	858	826	498	319	63	61	0	0	319
TIKURA	393	215	235	204	48	5	30	38	234
TIMMERMAN EAST	2,956	967	1,850	1,386	53	43% inc.	47	58	1,433
TIMMERMAN WEST	1,859	573	1,289	1,191	36	108% inc.	98	121	1,290
TRACK	295	308	263	176	40	43	0	0	176
"46"	25	25	14	14	44	44	0	0	14
"101"	584	579	305	305	48	47	0	0	305
GRAND TOTALS	83,120	58,731	53,900	38,138	54	35	3,468	4,647	41,607

1/ Average licensed use does not include licensed non-use, but does include temporary non-renewable grazing which accounts for the variance from active Federal qualifications.

2/ Inventoried grazing capacity includes 60 percent of palatable perennials and 20 percent of palatable annuals, both on areas suitable for livestock grazing.

3/ Proposed initial stocking rate is based upon the inventoried grazing capacity with deductions made for competitive big game forage and for forage which would be rested (ungrazed by livestock) during the cycling of grazing systems.

4/ Competitive big game forage includes vegetation that is palatable to livestock and found on areas suitable for livestock grazing

5/ This area has not been licensed previously. Grazing would be authorized annually on a temporary non-renewable basis.

6/ This area is presently fenced with a large area of private land. No license of use has occurred in the past. Proposed initial stocking rate would be licensed partially to each of the adjacent private landowners.

of grazing. The primary concern in the consideration of any changes in a grazing system or its scheduling would be continued achievement of the proposed multiple use objectives. Any proposed permanent modifications of the grazing systems would require prior evaluation in an Environmental Assessment Record (EAR), and would be subject to the findings of the EAR.

Selection and Development of Systems

In selecting the grazing systems for each allotment, several variables were considered, although no rigid criteria were used. Some of the more important considerations included: (1) the identified objectives for the resources, including big game and other wildlife habitat; (2) the present condition of the vegetation and soil; (3) the location of existing water sources and fences; and (4) the history of use and livestock operator needs.

The specific selection factors which were given most consideration are listed in order of importance for each allotment in Table 1-7. Allotments or portions of allotments (pastures) are grouped by grazing system. Allotment and pasture boundaries are shown on Map 1-2.

Steps generally followed (not necessarily in chronological order) in the preparation of the proposed grazing systems were:

1. Obtaining guidance from the applicable MFP regarding general management objectives and constraints imposed by other resource needs
2. Collecting and analyzing soils/vegetation data to determine grazing suitability and establish an initial stocking rate
3. Identifying specific objectives pertaining to the allotment under consideration
4. Conferring with the livestock operators, agency representatives, and any other concerned parties to obtain suggestions regarding a proposed grazing system
5. Developing the grazing system which, if possible, would both accomplish the identified management objectives and be compatible with the needs of the livestock operators
6. Determining the range improvement projects essential for the proposed grazing system
7. Listing procedures to evaluate the effectiveness of each grazing system in meeting the identified objectives

Typical Systems Proposed

Table 1-7 lists acreage and forage data for each allotment by type of proposed grazing system. As shown, there are several types and combinations of grazing systems represented in the proposed

TABLE 1 - 7

PUBLIC LAND ACRES, BIG GAME FORAGE DEMAND, PROPOSED LIVESTOCK STOCKING RATE, POUNDS OF VEGETATION REQUIRED AND RATIONALE FOR SELECTION BY GRAZING SYSTEM

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	SUITABLE PUBLIC LAND (ACRES)	INVENTORIED GRAZING CAPACITY (AUMS)	BIG GAME FORAGE DEMAND FOR ALL CLASSES		LIVESTOCK INITIAL STOCKING RATE (AUMS)	POUNDS OF FORAGE REQUIRED 2/	REASONS FOR SELECTION OF GRAZING SYSTEM (LISTED IN ORDER OF IMPORTANCE) 3/
				COMPET. (AUMS)	TOTAL (AUMS)			
I. REST ROTATION (RR)								
A. RR With Three Treatments (RR-3)								
Dempsey Allotment	20,014	15,312	1,496	116	142	1,116	1,006,400	1, 3-Deer (spring), 5, 7, 6
Macon Flat Allotment	38,982	38,982	3,524	157	185	2,506	2,152,800	14, 13, 7, 11
**North Gooding Allotment	24,588	24,308	4,293	134	147	3,079	2,580,800	1, 13, 14, 5
County Line Pasture								
Flat Top Pasture								
Peck Meadow Pasture								
Picabo Allotment	7,870	7,870	681	229 4/	285 5/	420	564,000	3-Deer (winter), Antelope Sage Grouse, 1
**Canal Allotment	399	399	40	0	0	40	32,000	1, 5, 7, 14
North Pasture								
Compound Allotment	457	457	60	0	0	60	48,000	1, 5, 7
**King Hill Allotment	20,334	14,367	1,434	365	456	728	947,200	1, 2-Seeding, 5, 7, 11
Bellmare & South Pastures								
Hog Creek Pasture								
Walker Reservoir Pasture								
Lava Allotment	28,000	8,501	1,002	8	10	675	548,000	1, 5, 7
Struthers Allotment	2,392	2,392	171	5	5	166	136,800	1, 13, 5, 7
Ticeska Allotment	3,891	3,891	498	0	0	319	255,200	1, 2-Seeding, 7, 11
Track Allotment	1,974	1,974	263	0	0	176	140,800	1, 2-Brush Control, 5, 7, 11
Hill City Branch Allotment	687	687	57	0	0	57	45,600	1, 5, 7
Kime Allotment	600	600	46	0	0	46	36,800	1, 5, 7
TOTAL FOR RR-3	150,188	119,740	13,565	1,014	1,230	9,388	8,494,400	
B. RR WITH FOUR TREATMENTS (RR-4)								
Pioneer Allotment	6,762	6,762	688	0	0	485	388,000	1, 2-Seeding, 6, 7, 14
Richfield Cattle Allotment	22,015	22,015	3,103	36	41	2,346	1,909,600	1, 10, 7, 5, 13, 14
**Clover Creek Allotment	16,664	16,664	1,352	57	68	982	840,000	1, 2-Seeding, 7, 11
Bliss Point Pasture								
Bray Lake Pasture								
Canal Pasture								
White Arrow Spring Pasture								
Kinzie Butte Allotment	8,684	8,684	909	8	8	720	582,400	1, 2-Seeding, 6
TOTAL FOR RR-4	54,125	54,125	6,052	101	117	4,533	3,720,000	
C. RR With Five Treatments (RR-5)								
Rattlesnake Allotment	20,281	19,971	1,331	408	500	749	999,200	1, 2-Seeding, 3-Deer (winter) 5, 6, 7, 11
TOTAL FOR RR-5	20,281	19,971	1,331	408	500	749	999,200	
II. MODIFIED REST ROTATION (MRR)								
A. MRR With Three Treatments (MRR-3)								
**Black Canyon Allotment	23,441	17,662	1,644	51	62	1,060	897,600	1, 2-Brush Control , 3-Deer, 5, 7, 11, 13, 14
City of Rocks Pasture								
Connet Springs Pasture								
Mormon Reservoir Pasture								
**Black Canyon Allotment	27,114	27,114	1,718	55	67	1,223	1,032,000	1, 2-Seeding, 3-Deer, 5, 6, 11, 13, 14
Dead Horse Pasture								
Four Mile Pasture								
Open Crossing Pasture								
North Shoshone Allotment	93,628	88,772	11,916	726	860	7,329	6,551,200	1, 5, 7, 6, 13, 14
TOTAL FOR MRR-3	144,183	133,548	15,278	832	989	9,612	8,480,800	
B. MRR With Four Treatments (MRR-4)								
***Davis Mountain Allotment	18,749	17,974	1,187	50	62	911	778,400	1, 2-Seeding, 5, 7, 13
Canal Pasture								
Lower Ferguson Pasture								
Lower Radermacher Pasture								
Onion Patch Pasture								
Timmerman East Allotment	28,952	28,952	1,850	47	58	1,386	1,155,200	1, 4, 5, 13
TOTAL FOR MRR-4	47,701	46,926	3,037	97	120	2,297	1,933,600	
III. DEFERRED ROTATION (DR)								
A. DR With Two Treatments (DR-2)								
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe								
**Canal Allotment	112	112	7	0	0	7	5,600	1, 7, 12, 14
South Pasture								
**Clover Creek Allotment	25,771	25,771	1,531	58	70	1,049	895,200	1, 7, 12, 13, 14
Coyote Hill Pasture								
Monument Gulch Pasture								
Gwin Ranch Allotment	487	487	74	10	10	62	57,600	1, 8, 11, 12
Lower Magic Allotment	263	263	52	0	0	52	41,600	1, 2, Seeding, 7, 11, 12
Spring Creek Allotment	563	563	96	6	7	90	77,600	1-meets specific maintenance objectives, 8, 7, 13, 14
Spud Patch Allotment	3,894	3,894	325	20	25	305	264,000	1, 11, 12, 13
The Pasture Allotment	918	918	72	0	0	72	57,600	1, 6, 11, 12
Tikura Allotment	3,643	3,643	235	30	38	204	193,600	1, 9
TOTAL FOR 1. DR-2	35,651	35,651	2,392	124	150	1,841	1,592,800	
2. DR-2 With Turn Out to 6/15: Defer Until After 10/16								
**North Gooding Allotment	16,817	15,660	1,502	129	159	671	664,000	1, 13, 14
Dog Creek Pasture								
Willows Pasture								
Swinging Bridge Allotment	2,939	2,939	399	15	19	185	163,200	1, 6, 12, 14
**Timmerman West Allotment	11,230	11,117	974	77	94	897	792,800	1, 6, 12, 14
Wedgetop Pasture								
Well Pasture								
TOTAL FOR 2. DR-2	30,986	29,716	2,874	221	272	1,753	1,620,000	

TABLE 1 - 7 (Continued)

PUBLIC LAND ACRES, BIG GAME FORAGE DEMAND,
PROPOSED LIVESTOCK STOCKING RATE,
POUNDS OF VEGETATION REQUIRED AND RATIONALE FOR SELECTION
BY GRAZING SYSTEM

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	SUITABLE PUBLIC LAND (ACRES)	INVENTORIED GRAZING CAPACITY (AUMS)	BIG GAME FORAGE DEMAND FOR ALL CLASSES		LIVESTOCK INITIAL STOCKING RATE (AUMS)	POUNDS OF FORAGE REQUIRED 2/	REASONS FOR SELECTION OF GRAZING SYSTEM (LISTED IN ORDER OF IMPORTANCE) 3/
				COMPET. (AUMS)	TOTAL (AUMS)			
D. DR with Three Treatments (DR-3) Two Before and One After Seed Ripe								
***Davis Mountain Allotment Deer Creek Pasture Upper Ferguson Pasture Upper Radermacher Pasture	18,994	16,175	2,934	23	146	2,917	2,450,400	1, 11, 12, 13, 14
Magic Allotment	6,052	6,019	870	70	87	800	709,600	1, 10, 7, 12, 13
TOTAL FOR DR-3	25,046	22,194	3,804	93	233	3,717	3,160,000	
IV. DEFERMENT OF USE (DU)								
A. DU Until Past Peak of Flowering; After 6/20 DUF								
***Davis Mountain Allotment Long Gulch Pasture	1,287	1,287	235	0	0	235	188,000	1, 8, 10, 12, 7, 13
North Slope Allotment	661	621	94	0	0	94	75,200	1-meets specific maintenance objectives, 8, 10, 7, 13, 12
TOTAL FOR DUF	1,948	1,908	329	0	0	329	263,200	
B. DU Until Seed Ripe Time; After 7/20 (DUS)								
Cove Creek Allotment	54	54	4	0	0	4	3,200	1, 9, 7, 12, 13
***King Hill Allotment North Pasture	5,034	4,148	466	65	75	401	380,800	1, 5, 7, 11, 12
Schooler Creek Allotment	58	58	30	10	10	20	24,000	1-meets specific maintenance objectives, 3-deer, elk, sage grouse, 5, 8, 9, 7, 13, 14
TOTAL FOR DUS	5,146	4,260	500	75	85	425	408,000	
C. DU Until Dormant Season After 8/20 (DUD)								
"101" Allotment	4,138	4,138	305	0	0	305	244,000	Winter grazing will help to protect unstable sandy soils 2-seeding
TOTAL FOR DUD	4,138	4,138	305	0	0	305	244,000	
V. MODIFIED DEFERRED ROTATION (MDR)								
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments with Cattle (MDR-2)								
Hash Spring Allotment	5,746	5,746	1,213	361	373	400	618,400	1, 5, 12, 13, 14
TOTAL FOR MDR-2	5,746	5,746	1,213	361	373	400	618,400	
B. MDR With Rotation of Use Periods In Five Pastures (MDR-5)								
Indian Allotment	35,348	34,065	2,799	108	132	2,389	2,016,800	1, 2-seeding, 5, 6, 7, 12, 13, 14
TOTAL FOR MDR-5	35,348	34,065	2,799	108	132	2,389	2,016,800	
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)								
Black Buttes	49	49	4	0	0	4	3,200	9, 13, 14
"46" Allotment	208	208	14	0	0	14	11,200	9, 13, 14
Fricke Allotment	87	87	7	0	0	7	5,600	9, 7, 13
Poison Creek Allotment	269	269	42	0	0	42	33,600	9, 10, 13
Springdale Allotment	310	310	39	0	0	39	31,200	Meets specific maintenance Objectives 9, 8, 13, 14
**Timmerman West Allotment Mahoney Flat Pasture	3,220	3,220	315	21	27	294	256,800	10, 12, 13, 14
TOTAL FOR ASG	4,143	4,143	421	21	27	400	341,600	
TOTAL FOR ALL GRAZING SYSTEMS	564,630	516,131	53,900	3,455	4,228	38,138	33,892,800	

1/ Allotments with two asterisks(**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks(***). That allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

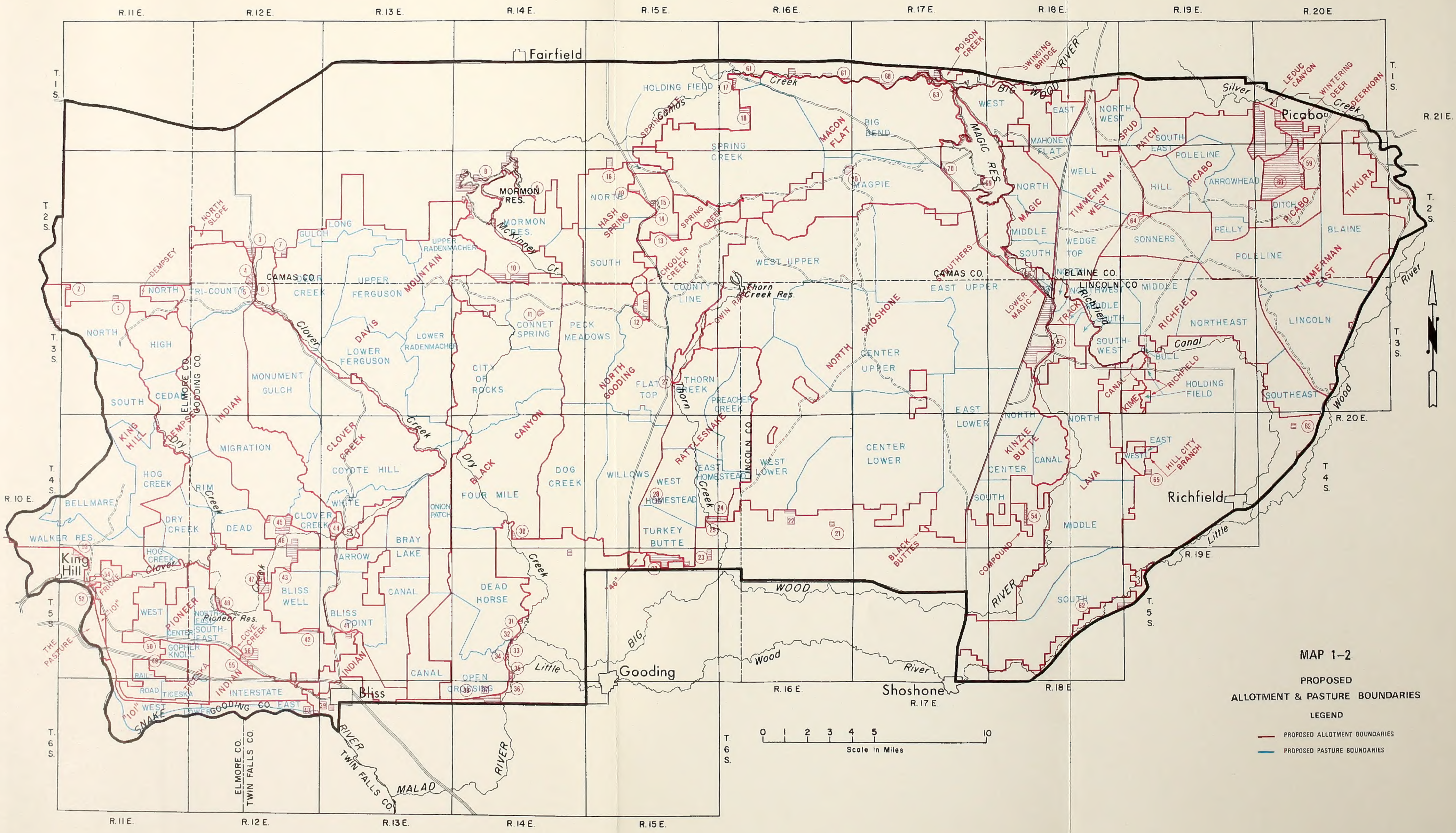
2/ Pounds of vegetation required is the sum of total wildlife AUMs plus livestock forage AUMs times 800 pounds per AUM.

3/ A number of factors of varying importance were considered when a grazing system was developed for each specific allotment or portion thereof. The most important factor is listed first, the least important listed last. The following descriptions apply to the code number shown in the body of the table.

FACTOR NO.	DESCRIPTION OF FACTOR
1.	Will help to meet the objectives of increased grazing capacity (including wildlife), improved vegetation condition, and improved key species composition by providing regularly scheduled rest from grazing during periods critical to the yearly growth cycle of plants. See Chapter 3, "Impacts on Vegetation" for a more detailed explanation of forage plant response to grazing and rest from grazing.
2.	Provide periodic rest from grazing to improve existing brush control and/or seeding projects.
3.	Will help to protect wildlife during a critical season.
4.	Sets a regularly scheduled period(s) of rest from grazing to minimize the impact on the vegetation resource in conversion of sheep grazing to cattle grazing.
5.	Sufficient native perennials to take advantage of a seed trample treatment.
6.	Combines several existing allotments into a manageable unit.
7.	Takes advantage of existing range improvements.
8.	Mostly private land with only a small amount of public land used together as a unit.
9.	Allotment a single fenced area of small size, not feasible to combine with a larger allotment; only feasible option is to specify a stocking rate and season of use.
10.	Continuation of a grazing system that is presently being followed and shows good resource response.
11.	Modification of an existing grazing system.
12.	Utilizes available livestock forage as fully as possible each year (every pasture used each year even though use in some is deferred beyond critical spring growing season).
13.	Fits best with existing livestock operation.
14.	Causes least economic hardship on the livestock operator(s).

4/ The total allotment demand is 564 AUMs competitive forage. Of that amount, 229 AUMs are proposed to come from public land and 335 AUMs are proposed to come from intermingled private land under a proposed agreement between the major private landowner and the Idaho Department of Fish and Game.

5/ Of the 704 total wildlife AUMs, 285 would come from public land and 419 AUMs would come from private land. For calculating pounds of vegetation required, 285 AUMs from public land was used.



MAP 1–2

PROPOSED ALLOTMENT & PASTURE BOUNDARIES

LEGEND

PROPOSED ALLOTMENT BOUNDARIES

PROPOSED PASTURE BOUNDARIES

action. Typical descriptions of the grazing systems are given below, and a comparison is presented graphically in Figure 1-2. More detailed information on the grazing systems proposed for specific allotments is available in the Shoshone District Office.

Rest Rotation

Rest rotation grazing systematically provides a period (or "treatment") of rest for at least one continuous growing season for each pasture included in the allotment. Normally the number of pastures is equal to the number of separate treatments employed in the particular grazing system. Each treatment consists of a scheduled, but different, period of grazing and/or resting during the grazing year. These treatments are "rotated" annually from one pasture to another to vary the periods of use and thereby provide for the physiological needs of the vegetation.

Rest rotation systems are generally considered desirable in areas where periodic continuous growing seasons of rest are required to restore range condition and plant vigor. They are also considered beneficial in improving forage production and vegetation composition within a relatively short period of time (five to ten years).

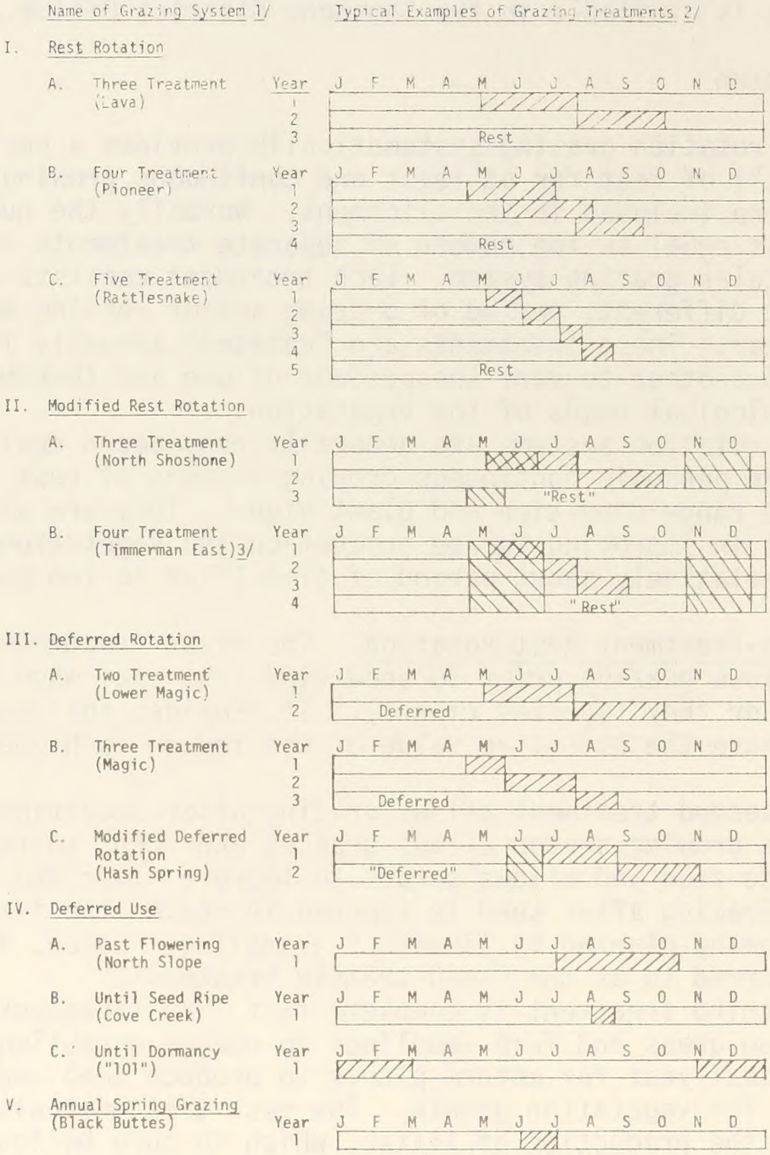
Three-Treatment Rest Rotation. The first treatment under this system allows grazing prior to seed ripe (the date when seed from important or "key" species ripens). It provides for good livestock gains because the nutritive value of the forage is highest at this time.

The second treatment allows grazing after seed ripe. Rest during the growing season allows grasses and forbs to reach maturity and produce seed and allows shrubs to improve vigor and produce plant tissue. Grazing after seed is ripened increases the likelihood of the seed being planted by livestock trampling. Hence, it is sometimes referred to as the "seed trample treatment."

The third treatment is complete rest from livestock grazing. It enables new grass and forb seedlings to become established, provides an additional year for mature plants to produce seed and allows a full year for vegetation growth. The rest treatment also greatly increases the production of litter, which in turn builds organic material, helps stabilize the soil, increases water infiltration, and reduces evaporation.

As shown on Table 1-7, three-treatment rest rotation systems are proposed for a total of 150,188 acres of public land in the ES Area.

Four-Treatment Rest Rotation. This system is similar to three-treatment rest rotation, except that it provides for two treatments of grazing prior to seed ripe; one beginning shortly after the growing season starts, and one after plants have made significant growth. All other variables being equal, this system allows a greater percentage of the allotment to be grazed than does the three-treatment system, since three of the four pastures are grazed instead of two


Name of Grazing System 1/
Typical Examples of Grazing Treatments 2/
I. Rest Rotation
A. Three Treatment (Lava)
B. Four Treatment (Pioneer)
C. Five Treatment (Rattlesnake)
II. Modified Rest Rotation
A. Three Treatment (North Shoshone)
B. Four Treatment (Timmerman East)3/
III. Deferred Rotation
A. Two Treatment (Lower Magic)
B. Three Treatment (Magic)
C. Modified Deferred Rotation (Hash Spring)
IV. Deferred Use
A. Past Flowering (North Slope)
B. Until Seed Ripe (Cove Creek)
C. Until Dormancy ("101")
V. Annual Spring Grazing (Black Buttes)
Year
1
2
3
4
5
J F M A M J J A S O N D
Rest
"Rest"
Deferred
"Deferred"

1/ The major categories of grazing systems listed are discussed in the text under the heading "Typical Systems Proposed". The allotments selected for examples of typical treatments are listed under each category in parenthesis.

2/ Months are indicated by their first letter above the diagrams. The growing season in the ES Area generally ranges from the middle of April to the end of September. Peak of flowering, seed ripe, and dormancy average approximately June 20, July 20, and August 20, respectively for typical key species. Grazing by cattle is indicated in the diagrams by cross-hatching slanted to the right (▨), sheep grazing by cross-hatching to the left (▧), and rest from grazing by blank spaces.

3/ In the Timmerman East Allotment, only two pastures would receive annual spring sheep use. The other two pastures would be grazed in the spring by sheep on alternating years. Sheep use during the periods shown would be intermittent, not exceeding 25 percent of the grazing capacity.

Figure 1-2. Comparison of Typical Examples of the Grazing Systems Proposed for the ES Area

out of three. This system has been proposed for 54,125 acres of public land in the ES Area (see Table 1-7).

Five-Treatment Rest Rotation. This system is similar to three- and four-treatment rest rotation except that three treatments are scheduled prior to seed ripe. As shown in Figure 1-2, the periods of grazing in each treatment are relatively short, providing for more uniform areal distribution of grazing. Also, the systematic shifting of grazing periods encourages the establishment and survival of a wider diversity of vegetation. Conversely, the five-treatment system requires a greater number of pastures and therefore more fencing, and results in greater concentrations of livestock during the periods of use than under the three- and four-treatment systems. A five-treatment system has been proposed for one allotment in the ES Area which includes 20,281 acres of public land.

Modified Rest Rotation. Several three- and four-pasture rest rotation systems have been proposed which do not provide for total rest from livestock grazing for a complete year. These systems typically include a small amount of sheep grazing (less than 25 percent of the grazing capacity) in one or more pastures during the "rest" treatment. Grazing in the rest pasture is allowed to provide for traditional intermittent trailing of sheep through the allotments on their way to and/or from summer ranges on National Forest land or high elevation private land. Otherwise, these modified systems are similar to the typical rest rotation systems discussed above. Proposed modified three-treatment systems would include 144,183 public land acres, while proposed modified four-treatment systems would include 47,701 public land acres in the ES Area (see Table 1-7).

Deferred Rotation

Deferred rotation grazing consists of two or more treatments at least one of which systematically provides rest from grazing during the critical growing period for each pasture included in the allotment. It is distinguished from rest rotation by the absence of a yearlong period of complete rest. However, like rest rotation, the treatments are rotated each year from one pasture to another.

Deferred rotation systems were selected for allotments where resource management objectives could be satisfied without yearlong rest periods. These systems were proposed where they were already in effect and/or most of the range was in fair or good condition and/or in the static or upward trend class.

Two-Treatment Deferred Rotation. The first treatment under this system allows grazing prior to seed ripe, providing highly nutritious forage for good livestock gains. The second treatment provides rest until seed ripe enabling grasses and forbs to increase their vigor and grow to maturity. Seed is produced and some seedlings become established. After seed ripe the grazing livestock harvest the forage and trample the seeds which were produced.

As shown in Table 1-7, several of the proposed two-treatment deferred rotation systems provide for grazing immediately after seed ripe, while others would defer the grazing until after October 16. The total public land included would be 66,637 acres.

Three-Treatment Deferred Rotation. This system is similar to two-treatment deferred rotation except that it allows two treatments of grazing prior to seed ripe. The early grazing is divided between two pastures, providing for more uniform grazing but usually greater concentrations of livestock, for shorter priods of time. A total of 25,046 acres of public land are proposed for this system.

Modified Deferred Rotation. A modified system of deferred rotation has been proposed for two allotments, including a total of 41,094 acres of public land. One of the systems would rotate the deferment of the cattle grazing on two pastures; however, a maximum of 25 percent of the AUMs would be allowed for annual spring sheep grazing in both pastures. The other system would rotate deferment of grazing by both cattle and sheep on three low-elevation pastures and on two higher-elevation pastures over a three-year cycle while accommodating some light spring sheep use (mainly trailing) in the "deferred" pastures.

Deferred Use

"Deferred use" in this ES refers to grazing delayed each year until a particular occurrence or date. In Table 1-7 and Figure 1-2 three categories of deferred use systems are identified: (1) past flowering, (2) until seed ripe, and (3) until dormancy. Each category indicates the time when grazing of the applicable allotment or pasture could begin.

Past Flowering. This system would allow grazing to begin after June 20, allowing plants to gain nearly their complete growth. This system has been proposed only for two areas that: (1) have been traditionally used with private lands, (2) are relatively inaccessible, and (3) are currently in high fair to good condition. Total public land involved is 1,948 acres.

Until Seed Ripe. This system would allow grazing to begin after July 20. Grazing would be allowed during the same period each year, but never during the critical growing period. Plants would be allowed to establish, gain vigor, reach maturity, and produce seed prior to being grazed. This system is proposed for a total of 5,146 acres of public land.

Until Dormancy. This system is similar to the other deferred use systems except that grazing could not begin until after August 20.

Grazing after the plants are dormant removes old growth on grasses and forbs and encourages new growth during the following growing season. The nutritional value of the forage is relatively low after dormancy, but provides adequate roughage. Normally, protein supplements are fed to provide a maintenance diet. This system is proposed for only one allotment, including 4,138 acres of public land.

Annual Spring Grazing

Proposed systems which would allow allotments or pastures to receive more than 25 percent of their use during the critical growing season (prior to peak of flowering) have been categorized as annual spring grazing (see Table 1-7). This type of grazing is proposed primarily for a few small allotments which are grazed with private land. The only proposed large area (in the Timmerman West Allotment) would actually provide for spring-fall sheep use of which only half would be in the spring. The area has been used similarly in the past and is generally in high fair to good condition. A total of 4,143 acres of public land is proposed for this type of grazing.

Protective Management

Protection from livestock grazing is proposed for 52 of the 70 proposed unallotted areas, totaling 8,596 acres of public land, which are either impractical to graze with livestock or are particularly important for some other use(s), such as recreation, wildlife habitat, and/or watershed protection (Table 1-3). Fourteen of the remaining eighteen unallotted areas would initially be ungrazed but would eventually be incorporated into adjacent allotments. Four of the unallotted areas would be used as stock driveways or holding fields.

Areas that support other uses that need protection from grazing would be fenced to prevent livestock trespass. Although no livestock grazing is proposed under this management, future grazing might be considered if it could be determined to be beneficial to the management of the other resources. If grazing were allowed, it would never exceed the inventoried grazing capacity of the area.

Grazing System Evaluation

Studies and evaluations would be conducted following implementation of each grazing system, in accordance with BLM Manual 4412, to determine if the MFP and specific objectives were being met. These studies typically include compilation of actual use, range trend, range/watershed condition, utilization, weather data, carrying capacity, and wildlife habitat monitoring. Where specific objectives were not met, adjustments would be made in season of use, livestock numbers (including complete removal), or the entire grazing system, depending on indicated need. An Environmental Assessment Record (EAR) would be prepared prior to initiating any change in proposed grazing management.

Future conversion in kind of livestock (from sheep to cattle or vice versa) would be allowed at the standard one-to-five ratio (one cow or five sheep per AUM) unless studies or the applicable EAR provided reasons not to allow conversion or supported a different ratio. If studies and evaluation indicated that additional forage were consistently produced (over one or more cycles of the grazing systems), increases in authorized livestock grazing would be considered. Allocation of additional forage would be consistent with the long-term objectives established by the applicable MFPs.

The unallotted areas where all AUMs were excluded from livestock grazing would be evaluated at least annually to determine if the objectives (e.g., providing wildlife forage and habitat, improving watershed conditions, and improving fisheries and riparian habitat) were being met. Several of the unallotted areas would be used as study areas to see how production, cover, etc., compared with the areas under grazing management.

Trespass Control

The proposed action would include a vigorous program for grazing trespass control. Constant surveillance would be maintained to ensure that the authorized numbers of livestock were allowed in the right areas at the proper times. Punitive action would be pursued against trespassers according to BLM regulations and policy. These actions would encourage compliance with the grazing systems and increase the reliability of the actual use information needed to evaluate the effectiveness of the proposed management.

PROPOSED RANGE IMPROVEMENTS

Construction or installation of nine different types of range facilities would be required to implement the proposal. These include: (1) a well with storage tank, (2) water pipelines, (3) spring developments, (4) reservoirs, (5) fences, (6) cattleguards, and (7) stock trails.

Certain land treatments, including limited chemical spraying, prescribed burning, and seeding projects, are also proposed in order to implement the grazing systems or to meet specific allotment objectives. The location of all proposed range improvements is shown on Map 1-3 enclosed in the packet with this ES. The types, units, costs, and year of implementation for the proposed improvements are shown by allotment in Table 1-8. The proposed scheduling, anticipated costs, and estimated acreage to be disturbed are summarized by type of range improvement in Table 1-9.

TABLE 1-8
PROPOSED RANGE IMPROVEMENTS, COST, AND SCHEDULE OF IMPLEMENTATION BY ALLOTMENT

ALLOTMENT 1/	Water Well (WW) and Spring Dev (SD)				Cattleguards (CG) and Reservoir Const (RC)				Spring Maint (SM) and Reservoir Maint (RM)				Pipelines (PL) and Stock Trails (ST)				Barbed Wire Fencing			Land Treatments: Seed(SD) Spray(SP) Burn(BR)			
	No.	Type	Cost($)	Year	No.	Type	Cost($)	Year	No.	Type	Cost($)	Year	Mi.	Type	Cost($)	Year	Mi.	Cost($)	Year	Acres	Type	Cost($)	Year
BLACK CANYON	2	SD	5,250	1982	2	RC	10,000	1982	2	SM	650	1982	2.3	PL	9,450	1982	5.3	8,920	1982				
CANAL									1	RM	3,000	1980								112	SD	784	1984
CLOVER CREEK					1	CG	1,325	1980									11.	22,000	1980				
COMPOUND																	.5	900	1984				
DAVIS MOUNTAIN	5	SD	13,125	1984													10.	20,000	1984				
DEMPSEY																	.9	1,480	1982				
GWIN RANCH																	.25	450	1984				
HASH SPRING	7	SD	16,100	1983	1	RC	5,000	1983									4.	6,500	1983	40	BR	500	1983
HILL CITY BRANCH					1	CG	2,400	1980									.8	1,200	1980				
INDIAN					2	CG	4,000	1982									7.4	12,980	1982				
KINZIE BUTTE					1 3	RC CG	5,000 3,975	1982 1982									11.	19,140	1982	1,000	SP	8,500	1982
LAVA													1. 5.	PL ST	4,850 1,500	1983 1983	5.	10,000	1982	2,000 4,000	SD BR	14,000 6,000	1984 1984
LOWER MAGIC																	.8	1,300	1980				
MACON FLAT					10	RC	50,000	1980															
NORTH GOODING	2	SD	5,000	1984	6	RC	30,000	1983	3 7	SM RM	4,500 21,000	1984 1983	15.	ST	15,000	1984				200	SP	5,000	1983
NORTH SHOSHONE					2 8	RC CG	10,000 15,500	1981 1981				1981	20.2	PL	101,000	1981	20.8	30,500	1981				
PICABO CATTLE																	4.	6,960	1980				
PIONEER					1	CG	2,500	1982									1.7	5,000	1982				
RATTLESNAKE													1.	PL	4,525	1982	5.	10,000	1982				
SCHOOLER CREEK																	.25	600	1984				
SPUD PATCH																	1.5	2,600	1980				
SPRINGDALE																	1.	1,800	1984				
STRUTHERS					1	RC	5,000	1981	3	RM	5,000	1981											
THE PASTURE																	.25	300	1984				
TICESKA																	2.	3,600	1982				
TIMMERMAN EAST	1	WW	22,000	1982	1 4	RC CG	5,000 4,400	1983 1983					8.	PL	36,525	1983	24.	41,760	1984				
GRAND TOTALS	16 1	DR WW	39,475 22,000		24 20	RC CG	120,000 34,100		11 5	RM SM	29,000 5,150		32.5 20	PL ST	156,350 16,500		117.5	207,996		2,112 1,200 4,040	SD SP BR	14,784 13,500 6,500	

1/ Allotments that have no proposed range improvements are not listed.

TABLE 1-9

PROPOSED RANGE IMPROVEMENT SCHEDULE AND COSTS

Proposed Range Improvements	Units	Proposed Units to be Completed and Costs by Year Units/Cost ($) 1980	1981	1982	1983	1984	Total Units	Acres Disturbed Per Unit	Acres Disturbed Total	Estimated Cost 1/ Per Unit	Estimated Cost 1/ Total
Water Wells	each	0	0	1/ 17,000	0	0	1.	.1	.1	$17,000	$17,000
Storage Tanks	each	0	0	1/ 5,000	0	0	1.	.1	.1	5,000	5,000
Pipelines	miles	0	20.2/ 101,000	3.3/ 13,975	9.0/ 41,375	0	32.5	1.5	48.8	4,811	156,350
Spring Development	each	0	0	2/ 5,250	7/ 16,100	7/ 18,125	16.	.01	.2	2,467	39,475
Spring Maintenance	each	0	0	2/ 650	0	3/ 4,500	5.	.01	.1	1,030	5,150
Reservoir Construction	each	10/ 50,000	3/ 15,000	3/ 15,000	8/ 40,000	0	24.	1.15	27.6	5,000	120,000
Reservoir Maintenance	each	1/ 3,000	3/ 5,000	0	7/ 21,000	0	11.	.69	7.6	2,636	29,000
Fencing	miles	18.1/ 34,060	20.8/ 30,500	38.3/ 71,120	4.0/ 6,500	36.25/ 65,810	117.45	1.21	142.1	1,771	207.990
Cattleguards	each	2/ 3,725	8/ 15,500	6/ 10,475	4/ 4,400	0	20.	.01	.2	1,705	34,100
Stock Trails	miles	0	0	0	5/ 1,500	15/ 15,000	20	1.5	30.	825	16.500
Artificial Seeding	acres	0	0	0	0	2,112/ 14,784	2112.	1.	2,112.	7.00	14,784
Prescribed Burning	acres	0	0	0	0	4,040/ 6,500	4040	1.	4,040	1.61	6,500
Herbicide Spraying	acres	0	0	1,000/ 8,500	200/ 5,000	0	1200.	1.	1,200	11.25	13,500
Total		$90,785	167,000	146,970	135,875	124,719			7608.8		$665,349

1/ Includes cost of watering troughs where applicable.

Range Improvement Constraints

All range improvements would be accomplished in conformance with BLM Manual requirements and would be subject to the minimum constraints summarized below. Particular types of range improvements and more specific constraints are discussed in more detail in the following section, "Typical Descriptions of Range Improvements."

Environmental Protection

A site specific Environmental Assessment Record (EAR) would be prepared prior to any work on a range improvement project. The EAR would require inter-disciplinary involvement to insure that the project would be environmentally acceptable, that all resources were considered, and that adverse impacts were minimized or mitigated.

Cultural Resource Clearance

Areas considered for range improvements would be surveyed by a professional archaeologist prior to construction to determine if cultural values were present. If such values were found, and evaluated as significant, the project would be redesigned or relocated to avoid disturbance to the cultural resources. If sites currently listed, or eligible for listing, on the National Register of Historic Places could be impacted by a proposed project, the State Historic Preservation Officer would be consulted.

Threatened or Endangered Species

A survey and clearance would be completed for threatened or endangered plants, as required by Section 7 of the Endangered Species Act of 1973. No threatened wildlife species have been identified within the ES Area. The only endangered wildlife species within the area, the bald eagle, is not considered to be susceptible to impacts from the proposed action.

Surface Protection

Disturbance of soil and vegetation during implementation of range improvements would be held to an absolute minimum. Land clearing for wells, pipelines, fences, access roads, etc., would be avoided when possible. Disturbed areas would be contoured, smoothed, and seeded. Locations of projects would be selected to avoid or minimize potential erosion. Existing roads and trails would be used to the extent possible for access to new project sites.

Topsoiling and Seeding

In instances where range improvements would result in excavation or substantial surface disturbance, topsoil would be stockpiled prior to disturbance and replaced after project completion. Any denuded areas would be reseeded with a mixture of grasses and/or other plant species to protect the soil and restore a pleasing appearance.

Wilderness Preservation

Under Section 603 of the Federal Land Policy and Management Act of 1976, BLM is required to review roadless areas having wilderness characteristics and report on their suitability for preservation as wilderness. Procedures for wilderness inventory have only recently been finalized and have not yet been applied to the ES Area, but would be carried out prior to implementation of the Proposed Action. Development of new range improvements and maintenance of existing improvements needed to support grazing management would continue, provided they did not cause undue degradation and did not impair the suitability of the areas for wilderness preservation.

Visual Quality

The visual impact of any proposed project would be considered before approval of location and design. The techniques explained in BLM Manual 6320, Visual Resources Contrast Rating, including concealment, repetition of elements, and minimizing surface disturbance, would be employed to reduce any potential visual impacts.

Typical Descriptions of Range Improvements

Water Well and Storage Tank

Only one water well with storage tank is proposed. It would be similar to the development shown in Figure 1-3 and would be located in Timmerman East Allotment. The construction site would be selected to make the development as inconspicuous as possible. The actual drilling site for the well would be selected to prevent unnecessary surface disturbance and clearing. The disturbed area would be 100 feet in diameter, or about 8,000 square feet.

A pit would be excavated for mud or water storage during the drilling. Drill cuttings would be placed in the pit, which would be covered upon completion. The filled pit would have a compacted density equal to that of the surrounding earth. A typical pit would cover 200 square feet and would be located within the larger disturbed area around the well.

The well would be drilled without using mud pumped under pressure, thus averting the possible plugging of waterbearing formations. A hole 9 inches in diameter and 600 feet deep would produce at least 9.8 cubic yards of drilled material. A 6-inch casing or pipe would be installed. Perforations in the casing would allow the water to enter and stand in the casing ready for pumping. A propane-driven generator would supply the power to run the electric pump motor.

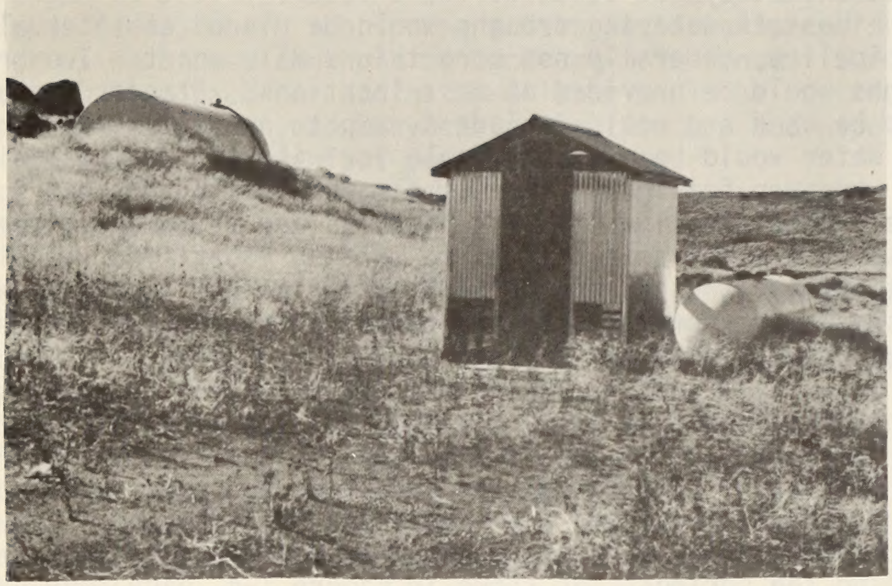


Figure 1-3. Typical well and storage tank. The well house contains a propane-driven electric generator. The storage tank (upper left) is painted olive green.

A horizontal cylindrical metal tank having a capacity of approximately 18,000 gallons would be used to store water from the well. It would be painted olive drab to blend with the sagebrush vegetation. This tank would be needed to provide a constant water supply to the pipelines and troughs without constantly starting and stopping the well's electric motor.

Pipelines and Troughs

A total of 32.5 miles of pipelines and approximately 50 troughs are included in the proposed range improvements to water arid areas.

The pipelines would be a polyvinyl chloride (PVC) type, with a typical pressure rating of 100 pounds per square inch. The size of the pipe would range from 1.25 to 2 inches in diameter, depending upon the design of the system, amount of water flow needed, and the slope of the ground.

The pipe would normally be laid in a trench excavated by a crawler tractor with a ripper tooth. The pipe would be buried to a depth of at least 18 inches below the surface. No unnecessary clearing would be allowed and surface disturbance would be restricted to approximately the width of the tractor.

Livestock watering troughs would be placed at intervals along the pipeline, generally not more than a mile apart. Two or three troughs would be provided at most locations. Standard metal troughs would be used and would include a ramp to prevent birds from drowning.

Water would be made available for wildlife during periods of need whenever feasible. For example, BLM would continue to operate wells and/or pipelines in rest pastures and after the close of the livestock grazing season if there were an identified wildlife need. Additionally, troughs on public land would be filled with water when livestock were removed from the range, and subsequent water provided if the need existed.

Spring Development

A total of sixteen springs have been proposed for development to improve the availability and quality of drinking water for livestock and to improve the wildlife habitat provided by the wet areas surrounding the springs. As shown in Figure 1-4, each development would

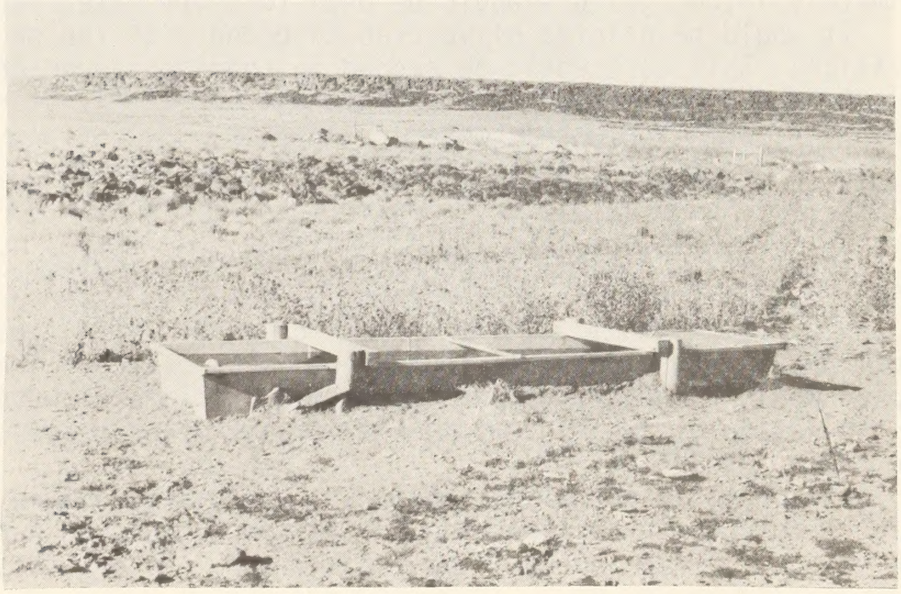


Figure 1-4. Typical spring development, showing livestock watering trough with bird ladder. Fenced spring area is in background.

include the installation of a perforated water collection box, a pipeline to carry the water away from the box, and a trough or several troughs to provide water for livestock. The spring head (point) or wet area (seep) where the spring arises would be fenced to exclude livestock using a post-and-hole or buck-and-pole fence. Surface disturbances by a back hoe and/or hand labor would be restricted to those actually necessary to bury the collection box and pipeline (approximately 500 square feet per development).

Spring Maintenance

Five springs within the ES Area which have been developed in the past need maintenance if the proposed grazing systems are to be implemented. Necessary maintenance would be dependent upon the existing development. For example, the collection box might need to be cleaned out or replaced, the pipeline might need replacement or extension, the valves or troughs might require repair or replacement, or a new fence might be needed at the spring head. Surface disturbance would generally be less than for a new spring development, and would not be expected to exceed 500 square feet.

Reservoir Construction

The construction of 24 reservoirs is proposed. These reservoirs would provide livestock water during the grazing season in years of normal precipitation. In years of low precipitation some of the reservoirs would probably go dry during the summer. Capacity of the reservoirs would vary from 2 to 10 acre-feet. The reservoirs would be located either in small basins where water normally collects or within natural drainage areas (see Map 1-2 enclosed in the packet with this ES for reservoir locations). The two proposed for the Black Canyon Allotment would each be placed in a major drainage and designed with a spillway to allow overflow when filled. The other reservoirs to be placed in drainages would not be constructed in the main channel, but rather to one side in order to avoid washing out during heavy storms. Both types of reservoirs in drainages would be fenced to exclude livestock and water would be piped to livestock watering troughs. The remaining reservoirs would be of the "pit" type, excavated in small natural basins to collect runoff from the surrounding terrain. The sides of these pit reservoirs would be graded to maximum slope of 3:1 to allow for livestock access.

For the average reservoir of both types approximately 20,000 square feet would be excavated with a crawler tractor to a maximum depth of 10 feet depending upon the depth of soil. The excavated material would be spread out to the sides of the reservoir and seeded with a mixture of perennial grasses. Construction equipment would reach the sites over existing roads or trails to the extent possible. Including the excavated soil, approximately 50,000 square feet of surface area would be disturbed per reservoir.

Reservoir Maintenance

Reservoirs tend to fill with silt after several years and may need to be dredged. Also, dams or spillways may need to be strengthened or repaired. Among the range improvement proposals for the ES Area are eleven reservoir maintenance projects. These reservoirs would be maintained with a crawler tractor and upgraded to the same quality standards as new reservoirs. The projects would involve reworking areas that had previously been disturbed. Approximately 30,000 square feet of disturbed surface area would be included in the average completed reservoir maintenance project.

Fence Construction

A total of 117.5 miles of barbed-wire fencing is needed for implementing the proposed grazing systems. The fences would usually be constructed of three strands of barbed wire fastened to steel posts.

Where fences are proposed to cross antelope areas, a smooth bottom wire would be used to minimize the obstruction to antelope movement. All other requirements of BLM Manual 1737 would also be met, including provisions for access, preservation of aesthetics, and ultilization of approved construction practices which minimize surface disturbance. Steep areas would be avoided or special construction stipulations (e.g., no mechanized vehicles) would be imposed.

Virtually no significant surface disturbance would result from fence construction in areas where woody vegetation is sparse or absent. On brushy areas, a linear area approximately the width of a vehicle would be disturbed. This would amount to approximately 1.2 acres of disturbance per mile of fence construction.

Cattleguard Installation

Twenty cattleguards have been proposed in conjunction with the fencing. These cattleguards are considered essential to maintain convenient public access on roads which would be intersected by proposed allotment or pasture fences. Either a single (12 feet wide) or double (24 feet wide) Powder River type cattleguard would be used depending upon road width. Precast concrete bases would be used for support. Essentially all of the disturbance necessary to install each cattleguard would be limited to the actual roadway. Excess material from the excavation in the roadway would be spread out or hauled away. Occasionally, minor additional excavation would be needed to provide for adequate drainage. In most cases the area disturbed during installation would be less than .01 acre per cattleguard.

Stock Trails

Twenty miles of stock trails have been proposed to improve livestock access to certain areas and/or provide for the movement of sheep wagons through presently impassable portions of an allotment. These stock trails would be constructed by a crawler tractor with a dozer blade. The width of the trails would average about 12 feet. Care would be taken to locate the trails in an unobtrusive manner, and slopes would be minimized to avoid erosion. Water bars would be used whenever the grade exceeded 4 percent for a distance of more than 100 feet. The area disturbed by construction of the trails would average 1.5 acres per mile of trail.

Artificial Seeding

A total of 2,112 acres are proposed for seeding by drilling in areas that are now typically devoid of desirable perennial vegetation. Replacement of some of the cheatgrass and other annuals with perennial grasses and forbs would be consistent with the identified objectives. The seedings would be accomplished by either standard or deep-furrow rangeland drills pulled by rubber-tired tractors. The seed mixture would be determined during preplanning of the project. All seedings would be subject to the provisions of BLM Manual 7413 "Seeding," EAR considerations, and on-the-ground layout to ensure environmental compatibility. Following seeding projects, the seeded areas would be rested from livestock grazing for at least two growing seasons to provide for establishment of seedlings.

Prescribed Burning

A total of 4,040 acres presently dominated by sagebrush are proposed for prescribed burning. A reduction in sagebrush on these areas would be desirable to enhance wildlife habitat or to meet other objectives as described in Table 1-4. The prescribed burning would be subject to the provisions of BLM Manual 7410 "Land Treatment," the constraints discussed above (see "Range Improvement Constraints" section), and also to detailed preplanning and on-the-ground field layout. Season of year to burn, pattern of burn and leave areas, firing techniques, weather requirements, equipment needed, and other details of these projects would be developed on a case-by-case basis to best suit the identified needs. Burned areas would be rested at least two full growing seasons after treatment to protect the watershed and allow new plants to become established.

Herbicide Spraying

Aerial application of 2,4-D herbicide spray is proposed for 1,200 acres. The purpose of the spray application would be to reduce concentrations of dense sagebrush and/or to eradicate concentrations of existing noxious weeds. No spraying would be conducted near water or in riparian areas. Normally, no more than 50 percent of the existing sagebrush would be eliminated in the spray areas, to maintain wildlife habitat and other values. The identified projects would be consistent with the allotment objectives and would be subject to the constraints in BLM Manual 7411.2, "Chemical Brush and Weed Control," that would determine the concentration of spray needed, location and pattern of application, weather conditions needed, time of year and time of day for application, etc. Sprayed areas would be rested from livestock grazing for at least two full growing seasons to increase plant vigor and provide for establishment of new plants.

Maintenance of Range Improvements

Both existing and proposed range improvements would be maintained in accordance with BLM Manual 7120. Fences and cattleguards would be supported by cooperative agreements with the permittees, which would obligate the permittees to perform routine repairs. All repairs would be required to meet BLM standards. All water developments constructed by BLM would normally also be maintained by BLM, limiting permittee responsibilities to periodic inspection and reporting of damage or malfunctions.

Funding and Manpower Requirements

As shown in Table 1-8, the estimated total cost of the range improvements needed to implement the proposed action exceeds $665,000. The Shoshone BLM District would be unable to fund these projects with regular base funding within a reasonable time frame. The scheduling and funding of the range improvements proposed in this ES are based upon the anticipated restoration of a funding "package" called the "Shoshone Project." This package consisted of $340,000 per year, to be available for five years. The package was obtained in 1974 and was utilized in 1974 and 1975. The remaining three years of funding were not used as proposed because of restrictions related to the suit filed by the Natural Resources Defense Council, Inc., et al., which led to preparation of this ES on the impacts of livestock grazing. Once this ES is completed, it is proposed to fund the needed range improvements with the appropriations which were diverted in 1975. In this way, it is anticipated that the necessary range improvements could be implemented within five years, as proposed.

In addition to the funding discussed above, several new positions would be needed on the Shoshone District staff to implement the proposed action. During the development period of 1980-1985, one full-time engineering technician and four seasonal engineering aids would be needed to accomplish the additional survey, design, and construction supervision workload. One full-time natural resource specialist would be needed to prepare and supervise construction contracts. One full-time range conservationist and four seasonal range aids would be needed to initiate and monitor range studies. Two full-time range technicians would be needed to monitor and supervise grazing under the new grazing systems, and one full-time archaeologist would be needed to complete field requirements and issue cultural resource clearances on proposed range improvements. After the first year of implementation (starting in 1981) one additional seasonal natural resource technician would be needed for inspecting and maintaining the proposed range improvements. Approximately 500 additional man-months would be needed over the five year implementation period to support the identified positions.

INTERRELATIONSHIPS

Bureau Planning System

The BLM's planning system is comprised of several components that are brought to focus in the resource management plan, which is called a Management Framework Plan (MFP). As mentioned previously, the applicable MFPs for the ES Area identify the management objectives, provide for land use allocations, and determine guidelines for multiple use management. The MFP decisions were developed using an adversary concept for resolving the various resource and land use conflicts. Table 1-10 summarizes the major conflicts related to livestock grazing that evolved during the planning process for the ES Area, the decisions made, and the resource trade-offs entailed.

Although tentative and relatively flexible decisions have been recorded in the final stage (Step III) of the MFP, they are subject to further modification following completion of this grazing ES. In order to obtain additional public input for the final MFP decisions, the "multiple use recommendations" (Step II MFP) have been used most heavily in preparing the proposed action for this ES. Other possible options are presented as "Alternatives to the Proposed Action" in Chapter 8. After approval and final review of this ES, appropriate modifications of the MFP Step III decisions will be documented, and management consistent with the modifications will be implemented.

Once the general management objectives, constraints, and guidelines have been established in the MFP, a more detailed "activity plan" can be developed for a particular resource, such as livestock grazing. The livestock grazing activity plan is called an Allotment Management Plan, or AMP, since each allotment would ideally have a separate plan. Once the Shoshone ES is completed, the selected grazing systems would form the basis for a new or revised AMP for each allotment.

For additional details on the BLM planning system refer to BLM Manuals 1601-1608 which can be reviewed at any BLM office. All of the planning documents and background data for the ES Area may be reviewed at the Shoshone, Idaho, BLM District Office.

TABLE 1-10

MFP RECOMMENDATIONS, CONFLICTS, DECISIONS, AND TRADE-OFFS

MFP-1 RECOMMENDATIONS LIVESTOCK	OTHER MFP-1 RECOMMENDATIONS CONFLICTING	MFP-1 CONFLICTS	MFP-3 DECISION	RESOURCE TRADE-OFFS AND/OR RATIONALE
1. Adjust the initial stocking rate in accordance with the 1976-1977 resource inventory (53,900 AUMs after 40 percent reservation for watershed, nongame wildlife, plant physiology, etc.)	**Wildlife** 1a. Intensify livestock grazing management to insure that no more than 60 percent of the herbaceous (palatable) vegetation in any one pasture is utilized.	**Wildlife** 1a. If all qualifying palatable vegetation were allocated to livestock alone big game competitive use would cause the recommended 60 percent utilization level to be exceeded.	**Wildlife** 1a. Do not exceed the recommended 60 percent utilization level by livestock and big game combined. This decision was made in order to reduce livestock-big game competition for desirable forage, to protect watershed values, provide for plant needs, and provide for small animals or bird needs.	1a. 3,469 competitive AUMs allocated for big game use and not available for livestock use (Table 1-6 Big Game Demand on Public Land).
	Recreation 1b. By 1990 provide for a 100 percent increase in all game populations and huntable nongame species by improving wildlife habitat conditions.	**Recreation** 1b. If all allocated palatable vegetation were allocated to livestock alone, game, and to some extent nongame, populations would not likely increase by 100 percent	**Recreation** 1b. Provide adequate habitat for all species consistent with the wildlife activity recommendations.	1b. Although not an MFP resource conflict, the proposed livestock initial stocking rate is 4,831 AUMs lower than the 1972-1976 average licensed use (Table 1-6 : or 1972-1976 Average Licensed Use less the 1976-1977 Inventoried Grazing Capacity).
2. Implement grazing systems involving rest rotation principles on 85 percent of the public lands.	**Wildlife** 2a. Intensify livestock grazing management to insure that no more than 60 percent of the herbaceous (palatable) vegetation in any one pasture is utilized.	**Wildlife** 2a. Under very intensive livestock grazing systems it would be likely that utilization would exceed the recommended 60 percent in numerous use pastures.	**Wildlife** 2a. Do not exceed the recommended 60 percent utilization level by both livestock and big game in any pasture where grazing occurs. This limitation dictates that a maximum of 60 percent of the palatable forage actually present in the use pastures could be utilized. Palatable forage present in rest pastures would not be available.	2a. 12,293 AUMs left to protect watershed values and provide forage and cover for small mammals and birds.
	Watershed 2b. Remove no more than 50 percent of the current year's growth of herbaceous (palatable) ground cover in any allotment during a grazing season.	**Watershed** 2b. Same as above only proposed use would likely exceed the 50 percent recommendation.	**Watershed** 2b. Modify the watershed recommendations. Maximum utilization by livestock in any pasture would be determined in the formulation of grazing systems. The degree of utilization in any pasture would not exceed the identified needs of available food and cover and watershed protection. It was felt that total vegetation production (Table 2-12), of which only a small portion would be utilized by herbivores (approximately 11 percent), would provide adequate ground cover.	2b. Same as 2a. Above
3. Allot and regulate the grazing use on tracts of public land that are separated from other public lands by natural barriers or private land.	**Wildlife** 3a. Small parcels of isolated public land having upland game habitat should be retained and managed for upland game.	**Wildlife** 3a. Grazing management conducive to proper wildlife habitat management is difficult if not impossible to implement on many isolated tracts due to location and/or terrain (6,865 acres).	**Wildlife** 3a. On the tracts involved (Table 1-3) consideration to uses other than grazing was considered overriding. Fencing to insure protection would be provided on a priority basis.	3a. 8,596 acres producing an estimated 857 AUMs would be protected from livestock grazing. However, neither of these figures were used in the 1976-1977 inventory base for allotted areas.
4. Remove competing brush species on approximately 157,000 acres of public land. Also remove brush species and seed an additional 53,500 acres of public land.	**Wildlife** 4a. No land treatment that would reduce existing shrub density should be proposed on critical deer winter ranges.	**Wildlife** 4a. Sagebrush comprises an important component of the deer's winter diet and any reduction in quantity would degrade the capacity of the habitat to winter deer.	**Wildlife** 4a. No sagebrush control projects will be allowed on public lands within critical deer winter ranges. (63,000 acres).	4a. 20,000 acres within critical deer winter ranges lend themselves to land treatments. These projects would not occur under the proposed action.
	4b. Maintain the existing sagebrush within a 2-mile radius of sage grouse strutting grounds and on all identified sage grouse wintering areas.	4b. Unrestrained removal of sagebrush adjacent to sage grouse strutting grounds would have a catastropic impact on sage grouse populations. Sage grouse are totally dependent on sagebrush during the winter months for their existence.	4b. Selectively control sagebrush within a 2-mile radius of strutting grounds in a manner that will not adversely impact present and future nesting sage grouse populations (270,000 acres). Selective brush control may be undertaken on sage grouse wintering areas only after careful consideration that remaining sagebrush habitat will be adequate for projected populations (45,000 acres).	4b. Approximately 150,000 acres within sage grouse strutting ground limits (2-mile radius) were considered feasible to treat with no constraints (MFP-1), but no land treatments would take place under the proposed action within these areas. 4b. No land treatments are proposed within the sage grouse wintering areas.

TABLE 1-10 Continued

MFP RECOMMENDATIONS, CONFLICTS, DECISIONS, AND TRADE-OFFS

MFP-1 RECOMMENDATIONS LIVESTOCK	OTHER MFP-1 RECOMMENDATIONS CONFLICTING	MFP-1 CONFLICTS	MFP-3 DECISION	RESOURCE TRADE-OFFS
	Recreation 4c. No management activity should be allowed to cause any evident changes in the form, line, color, or texture that is characteristic of the landscape in Class II rated areas. (See Chapter 2, Visual Resources).	Recreation 4c. Unrestrained removal of sagebrush would cause definite changes in the visual quality found in this area. Likewise, seedings, if not well planned, would cause changes in the visual environment.	Recreation 4c. Use the recreational multiple-use recommendation as guidance along with guidelines found in BLM Manual 6320 when planning brush removal or seeding projects. Utilize concealment, repetition of elements, and minimize surface disturbance. Projects should reflect what could be a natural occurrence within the characteristic landscape.	4c. Visual and scenic constraints were considered for land treatment projects that would take place under the proposed action. No resource trade-offs were involved but layout was affected.
	Cultural Resources 4d. Prohibit all land disturbing developments and uses on archaeological sites.	Cultural Resources 4d. Any action that has the potential for causing land surface disturbance could degrade or destroy archaeological sites.	Cultural Resources 4d. Prohibit all land disturbing developments and uses on archaeological sites. As sites are discovered, various State and Federal laws mandate protection and this has long been Bureau policy (59 acres).	4d. Under the proposed action, 59 acres would be fenced involving 5 AUMs.
			Soils 4e. At the time the MFPs were completed, usable soil productivity data were not available. This data became available just prior to the ES process at which time it was decided proposed projects would be eliminated if soils involved were determined to be unsuitable or even mariginal for producing the desired results (187,000 acres).	4e. Projects under the proposed action did not involve marginal soils. Therefore, there were no resource trade-offs resulting from soils constraints.

Overall Decision

The objectives as set forth in the proposed action could be met through livestock management actions as opposed to land treatments. Manipulation of livestock numbers, seasons of use, and class of livestock would accomplish the desired results in a reasonable time frame (15 years) and at less cost in terms of public dollars spent.

County Planning

Portions of five counties are included in the ES Area: Blaine, Camas, Elmore, Gooding, and Lincoln. All have some type of comprehensive plan completed. Blaine and Camas counties have passed zoning regulations and the other counties are developing their zoning plans. None of the county plans or zoning regulations put binding constraints on public land management, but it has been BLM policy to avoid decisions that would be incompatible with local planning. Any potential conflicts with county planning and zoning were resolved during the formulation of the Proposed Action.

Private Land

Approximately 33,000 acres of private land are included within the proposed allotments of the ES Area. These lands are primarily owned by permittees and would be subject to the proposed grazing management under voluntary exchange-of-use agreements. The forage provided by these areas would comprise approximately 5 percent of the total AUMs. The allowable AUMs for each tract would be determined by BLM using the same methodology as for public land. All private landowners would have the prerogative to fence their lands away from the BLM allotments and pursue some alternate form of management.

Other Agency Programs

U.S. Forest Service

The Sawtooth National Forest boundary lies within ten miles of the northern boundary of the ES Area. Of the 112 livestock operators presently using the ES area, approximately 20 also graze livestock in the National Forest, typically during the summer season. These operators have traditionally used Forest Service lands in conjunction with BLM, State, and/or private lands to support a year-round grazing operation. Therefore, coordination of seasons of use and other aspects of the grazing systems was considered when developing the Proposed Action.

U.S. Fish and Wildlife Service

The Fish and Wildlife Service (F&WS) conducts predator control in the ES Area under a joint agreement with BLM and the Idaho Department of Fish and Game. The control consists of aerial shooting and limited trapping of coyotes, mostly during the fall, winter, and early spring. No chemical toxicants are used. The F&WS is also the consultatory agency under the Endangered Species Act of 1973.

Federal Power Commission

Approximately 2,000 acres within the ES Area have been withdrawn under the provisions of the Federal Power Act. These withdrawals lie adjacent to the Snake River within The Pasture and "101" allotments. These areas are not fenced away from the rest of the allotments, and in the past have been grazed with the adjacent public land. However, if a power project (e.g., a hydroelectric dam) were to be licensed in the future by the Federal Power Commission, authorized grazing would be immediately and automatically terminated on any lands within the project area.

Environmental Protection Agency

The Environmental Protection Agency (EPA) has been given initial responsibility for implementing Section 208 of the Federal Water Pollution Control Act Amendments of 1972. Under this Act and Executive Order 11752, BLM is required to control water pollution that originates from large areas of public land (nonpoint source pollution). EPA is working through State and areawide water quality management agencies and local Soil Conservation Service offices to complete the 208 plans for controlling water pollution in problem areas. Once these plans are finalized, BLM will take whatever measures are necessary to comply with their requirements.

Idaho Department of Lands

The Idaho Department of Public Lands (IDPL) administers approximately 31,000 acres of land within the proposed allotments in the ES Area. These lands are distributed among most of the allotments and provide approximately 5 percent of the total AUMs. They are leased by livestock operators for grazing on ten-year terms. BLM would continue to issue exchange-of-use licenses to interested permittees that have control of State lands within their allotment(s). IDPL has agreed to accept the BLM's calculation of AUMs allowable for exchange-of-use on State lands. However, IDPL has the prerogative to fence the State lands out of the allotment and/or lease them to nonpermittees for other purposes.

Idaho Transportation Department

The Idaho Transportation Department (ITD) maintains approximately ten miles of interstate, 100 miles of Federal, and 60 miles of State highway within or adjacent to the ES Area. In most cases where these highways cross public land, the right-of-way boundaries have been fenced to prevent livestock from endangering motorists. Because the Proposed Action includes the allowance of cattle grazing in two allotments (North Shoshone and Timmerman East) where past use was by sheep, additional fencing will be needed along State Highway 75 and U.S. Highway 93. All highway rights-of-way have been excluded in the calculations of allotment acreages and AUMs.

Idaho Department of Fish and Game

The Idaho Department of Fish and Game (IDF&G) has established State goals and objectives for wildlife population management on the public lands within the ES Area. Since wildlife habitat would be greatly affected by the proposed grazing management (especially the grazing systems and stocking rates) there has been close coordination between BLM and the IDF&G in developing the Proposed Action. Consequently the proposed grazing would be consistent with the identified wildlife management needs. Specifically, the IDF&G personnel have cooperated with BLM in determining existing big game numbers and projecting desirable herd sizes for the ES Area by 1990.

Idaho Department of Parks and Recreation

The Idaho Department of Parks and Recreation has certain responsibilities for evaluating and enhancing recreation opportunities throughout the State. As a part of their program they have published a State Comprehensive Outdoor Recreation Plan (SCORP). This plan relies upon the continued use of lands administered by BLM or other agencies to fulfill many of the general recreation needs within the State. These needs were considered in formulating the proposed action.

CHAPTER 2

DESCRIPTION OF THE ENVIRONMENT

- EXISTING ENVIRONMENT -

CLIMATE

The ES Area has cold winters and hot, dry summers. As depicted in Figure 2-1 and Table 2-1, most precipitation occurs from October through June, much of it as snow. This "crop year" precipitation is more indicative, in timing and amount, of the moisture available for plant growth than total annual precipitation by calendar year. Yearly fluctuations of 49 to over 200 percent of "normal" precipitation cause corresponding variations in vegetation production.

The growing season (frost-free period) varies with elevation, exposure, and other factors. It ranges from an average 128 days at Bliss, to 118 days at Shoshone, to 103 at Richfield, to a low of 69 days at Fairfield. Average last spring dates of various low temperatures are shown in Table 2-2.

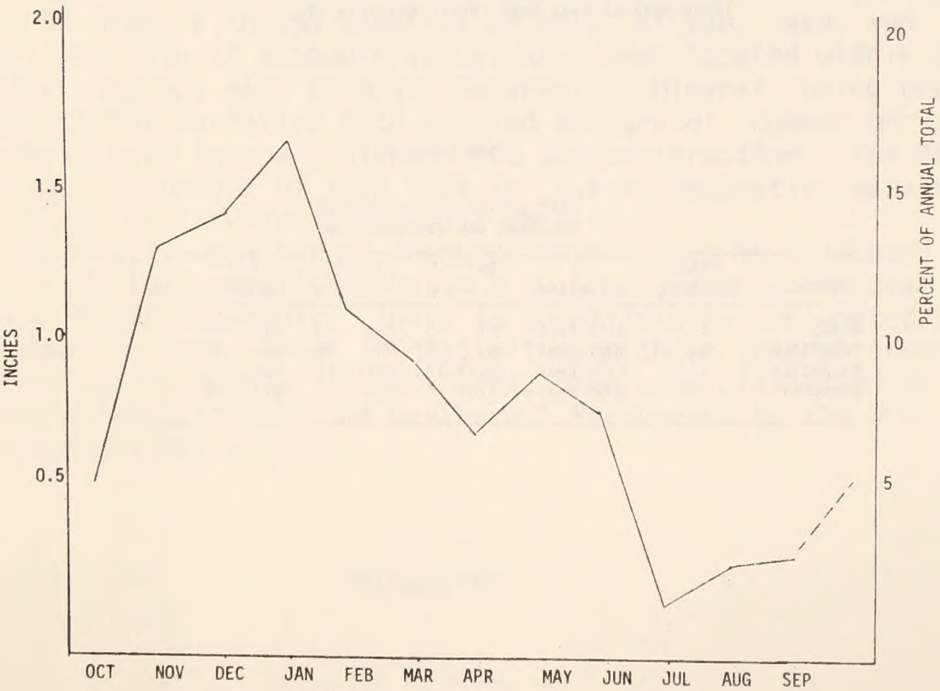


Figure 2-1. Average monthly precipitation in inches and percent of total, averaged for six stations within the ES Area

TABLE 2-1

WATER YEAR PRECIPITATION

MONTH	STATION					
	BLISS	FAIRFIELD	GOODING	PICABO	RICHFIELD	SHOSHONE
October	.46	.61	.41	.75	.53	.55
November	1.13	1.80	1.13	1.55	1.02	1.02
December	.95	1.88	1.13	2.02	1.21	1.11
January	1.14	2.56	.90	2.20	1.44	1.35
February	.81	1.86	.81	1.14	1.03	.92
March	.70	1.25	.78	1.21	.82	.85
April	.52	1.10	.53	.93	.57	.58
May	.74	1.05	.83	1.11	.82	.80
June	.57	.99	.48	1.48	.60	.42
July	.11	.25	.03	.24	.22	.11
August	.14	.27	.05	.63	.33	.18
September	.22	.33	.14	.60	.31	.27
TOTAL	7.49	13.95	7.22	13.86	8.90	8.16
October 1 to June 30	7.02	13.10	7.00	12.39	8.04	7.60

Sources: U.S. Department of Commerce, Weather Bureau. 1964 Climatography of the United States, No. 86-8.
Climatic Summary of the United States - Supplement for 1951 through 1960. Idaho.
National Oceanic and Atmospheric Administration. Climatological Data, Idaho, 1961-1977.
Stevlingson, David J. and Dale O. Everson (no date). Spring and Fall Freezing Temperatures in Idaho. Idaho Agricultural Expt. Stat. Bulletin 494.

TABLE 2-2

LAST SPRING OCCURRENCES OF SELECTED LOW TEMPERATURES

STATION	YEARS OBSERVED	ELEVATION	24° F OR BELOW	28° F OR BELOW	32° F OR BELOW
BLISS	31	3275 feet	May 5	May 5	May 20
FAIRFIELD	14	5065 feet	May 2	May 30	June 22
RICHFIELD	25	4306 feet	April 28	April 14	June 5
SHOSHONE	28	3950 feet	April 26	May 12	May 24

AIR QUALITY, GEOLOGY, AND MINERALS

Although there are no monitoring stations in or near the ES Area, air quality appears excellent to the casual observer. There is rarely, if ever, evidence of industrial smoke or haze. Occasionally, there are occurrences of smoke from range fires, but these are temporary in nature.

Geologically, the ES Area, like the rest of the Snake River Plain, consists predominantly (80 percent) of volcanic rocks (Map 2-1). Approximately 10 percent of the ES Area is covered by unconsolidated detritus which conforms to the topography. Most of this material is alluvium which occurs along the major drainages including the Snake and Wood Rivers and Camas, Clover, and Silver Creeks. A maximum of 5 percent of the ES Area is covered by sedimentary deposits. There are small areas of granitic rock outcrops in the Picabo, Timmerman and Bennett Hills, thought to be arms of the Idaho Batholith (Larsen, E.S., Jr., and R.G. Schmidt 1958).

Recent lava flows occurring in the eastern and southeastern portions of the ES Area are shown on Map 2-1 because of their distinctive surface characteristics. Extensive bare rock reefs and ridges are in evidence, as the flows are largely unmodified by surface deposits or weathering. Soils on these flows are either poorly developed or nonexistent.

There are few known mineral deposits of economic significance in the ES Area, although deposits of gold, silver, lead, and copper, possibly of economic value, have been located within the granitic outcrops east of Magic Reservoir. Minerals being produced include common varieties such as sand and gravel, common borrow, and riprap used in road, highway and dam construction. The BLM sells small tonnages of lava rock for use as decorative masonry in such things as fireplaces and wall panels.

Interest in geothermal resource development is evidenced by a block of 25 lease applications in a 50,000-acre area immediately south of Magic Reservoir. There is no officially designated Known Geothermal Resource Areas (KGRAs) although three general areas, totaling approximately 150,000 acres, have been classified as "Valuable Prospectively for Geothermal Resources" by the U.S. Geological Survey (USGS).

TOPOGRAPHY

The northern and southern boundaries of the ES Area lie within the elongated and relatively flat Camas Prairie and Snake River Plain, respectively. Most lands along these boundaries are privately owned, and the intermingled public lands are mostly rough, rocky, and broken.

The elevations in the Camas Prairie average about 5,000 feet. Elevations along the southern border range from 2,674 feet near King Hill, to above 4,000 feet east of Shoshone. The ES Area has a moderate downward slope from northeast to southwest. Since the north-south dimension is so much smaller than the east-west, the slope from north to south is much more apparent to the eye. Elevations rise abruptly immediately south of the Camas Prairie along the general line of the Bennett, Timmerman, and Picabo Hills, and then fall off moderately to the Snake River Plain. High points along the hills are in the neighborhood of 6,000 feet, the highest point being 6,800 feet on Davis Mountain in the Bennett Hills.

East of State Highway 75 the land is relatively flat and gently sloping. Large areas are suitable for farming and are, for the most part, privately owned. There are large areas of recent lava flows where nature has not yet provided a sufficiently thick mantle of soil to hide the low rocky ridges and lava flow lines. These lands are largely public.

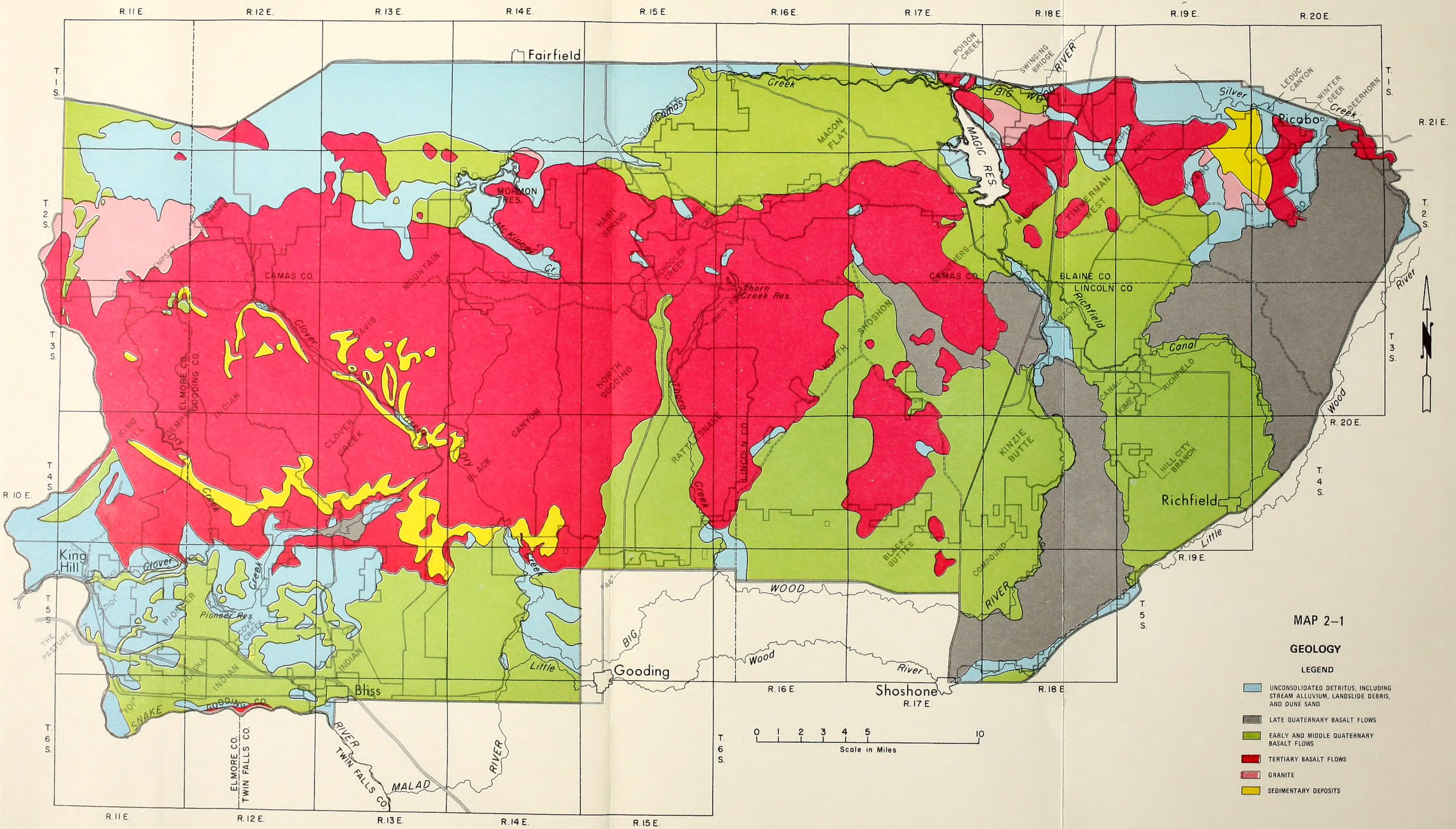
West of State Highway 75 the terrain becomes progressively more rough and broken. An area northwest of Gooding is so beset with exposures of bare rock which have been eroded by wind and water into grotesque shapes, as to have acquired the name "City of Rocks." In the extreme western portion of the ES Area the terrain moderates somewhat into wide expanses of table lands separated by moderately deep canyons with abrupt walls (see Map 2-2).

SOILS

Soils in the ES Area have developed in a variety of climatic regimes on Tertiary, Pleistocene, and Recent volcanics intermingled with aeolian silts (loess), sands, alluvium, and lake beds. In general, the soils are medium to fine textured with light brown to brown surface horizons, brown subsoils, and light brown substrata with occasional zones of carbonate-silica cementation.

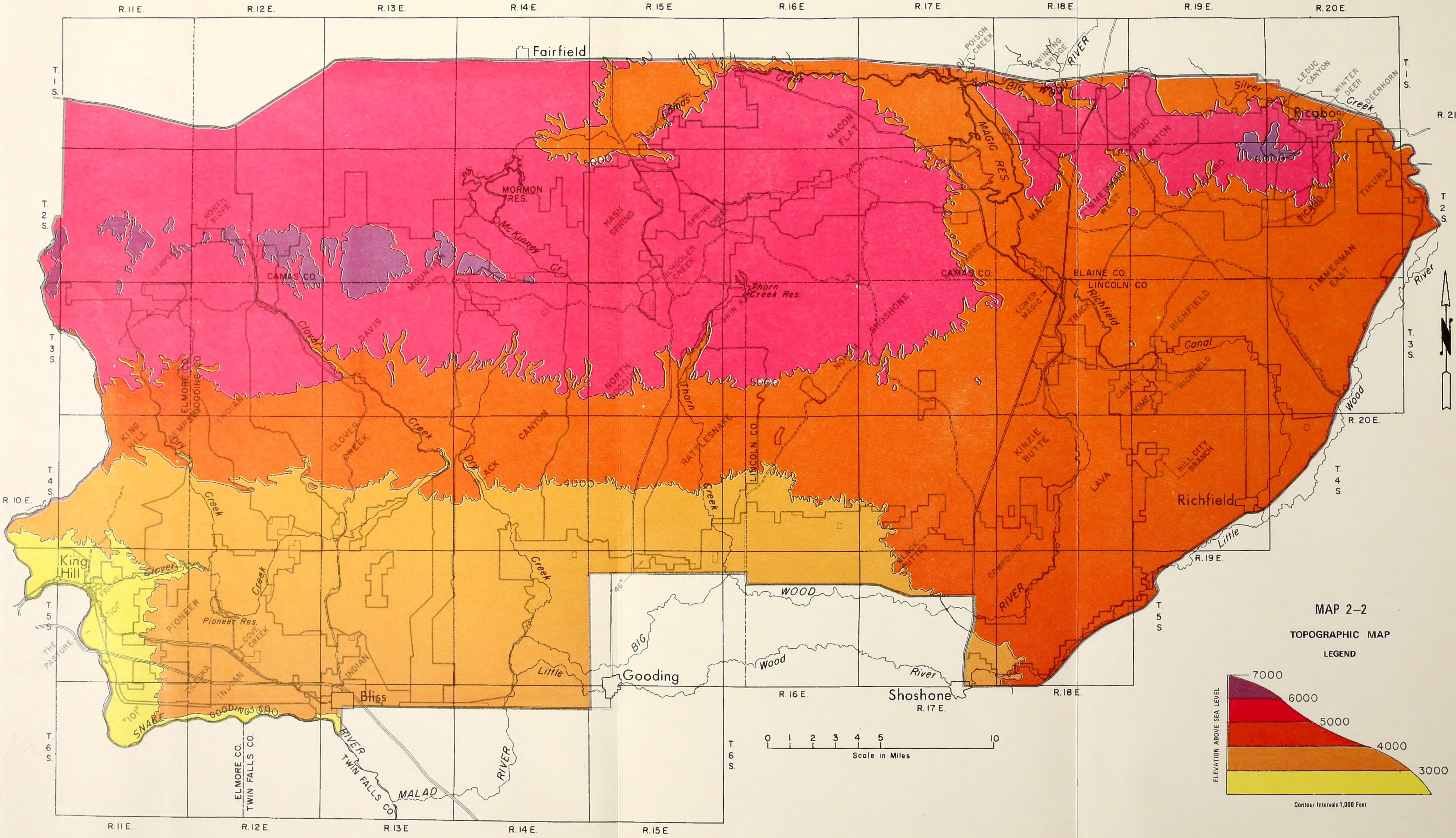
Soils Inventory

Soils of the ES Area were inventoried by the Soil Conservation Service in 1976. The survey was conducted to show the extent and location of the soils and to obtain general information for planning purposes. All standards and procedures were followed to meet the requirements of the National Cooperative Soil Survey. The inventory was mapped at a scale of 1:21,120 using phases of soil series as a basis for developing the mapping units. Mapping



MAP 2–1

GEOLOGY



MAP 2–2

TOPOGRAPHIC MAP

units consisted of phases of soil series and complexes. Soil boundaries were drawn on aerial photos using a stereoscope and then field checked to establish accuracy. Individual soils were identified and described from soil pits and the percentages of each soil within a mapping unit were obtained by on-the-ground observation, photo interpretation, and some aerial observation by helicopter. An unpublished soil survey report showing the boundary and extent of mapping units and detailed profile and mapping unit descriptions is available at the Shoshone District Office.

Soil Associations

From the soils inventory a general soils map (Map 2-3) was designed to show the distribution of four general soil groups and their component soil associations in the Shoshone ES Area. The general groups are based on broad landscape characteristics and are composed of one or more soil associations, which include one or more similar mapping units identified in the inventory. Each soil association has its own distinctive pattern of soils and landscape features and consists of one or more soils of major extent and inclusions of soils of minor extent. Table 2-9 (see "Vegetation" section) shows the relationship of the major soils series to the major vegetation zones and ecological sites occurring in the ES Area. The general soil groups and their component soil associations are briefly described below. The numbers preceding the soil association names correspond to the map unit numbers on Map 2-3. The characteristics of the individual soil series are summarized in Table 2-3.

Foothill and Mountain Soils

These shallow to very deep, well-drained soils are found on nearly level to steep slopes. They are generally moderately coarse textured when developed in granitic rocks and moderately fine textured when derived from volcanics.

1. Roanhide-Earcree. This soil association consists of soils on hills and mountain slopes at elevations of 4,800 to 6,500 feet. Slopes range from 4 to 50 percent. The average annual precipitation is about 16 inches, average annual air temperature is 40 degrees Fahrenheit, and average frost-free period is about 75 days.

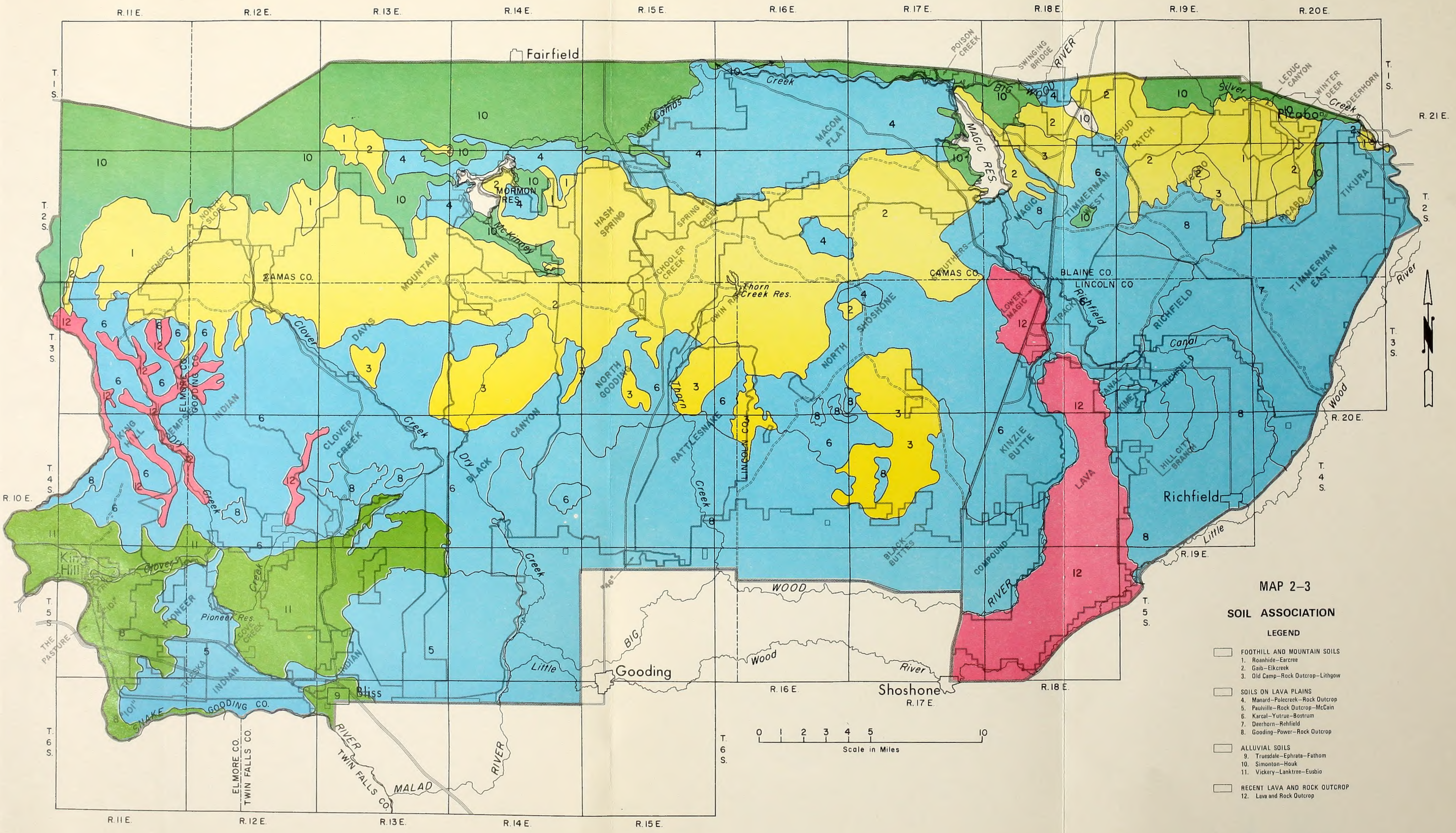
This association makes up about 1 percent of the survey area. It is approximately 50 percent Roanhide and 35 percent Earcree. The rest consists of minor soils.

Roanhide soils are on south and west exposures. They are moderately deep, well-drained soils that formed in residuum weathered from granitic rocks. In a typical profile, the surface layer is grayish-brown and brown coarse sandy loam 9 inches thick. The subsoil is brown coarse sandy loam 6 inches thick. The substratum is light brownish-gray coarse sandy loam 7 inches thick over granite at 22 inches.

TABLE 2-3

SUMMARY OF SOIL CHARACTERISTICS

SERIES NAME	CLASSIFICATION	POSITION ON LANDSCAPE AND SLOPE RANGE (%)	PARENT MATERIAL	TEXTURE		DEPTH (Inches)	WATER HOLDING CAPACITY	PERMEABILITY	SURFACE RUNOFF	EROSION SUSCEPT.
				SURFACE	SUBSOIL					
Bostrum	Typic Palexeralfs, fine, montmorillonitic, mesic	lava plains 0-20	basalt	silt loam	silty clay	20 - 40	moderate	very slow	slow to medium	slight to mod.
Deerhorn	Calcic Argixerolls, fine-loamy, mixed, mesic	Lava plains 0-20	aeolian sands and basalt	fine sandy loam	loam	20 - 40	moderate	moderate	slow to rapid	slight to high
Earcree	Pachic Cryoborolls, coarse-loamy, mixed	hills and mountain slopes 20-50	granitic colluvium & alluvium	gravelly coarse sandy loam	gravelly loamy coarse sand	60+	moderate	moderately rapid	very rapid	high to v. rapid
Elkcreek	Ultic Argixerolls, fine-loamy, mixed frigid	hills and lava plains 0-50	basalt and rhyolite	loam	clay loam	20 - 40	moderate	moderately slow	slow to rapid	slight to high to
Ephrata	Xerollic Camborthids, coarse-loamy over sandy or sandy-skeletal, mixed mesic	basalt terraces 0-20	alluvium	sandy loam	sandy loam	60+	moderate	moderately rapid	slow to medium	slight to moderate
Eusbio	Xerollic Haplargids, fine-loamy, mixed mesic	terraces 0-50	siltstone	silt loam	silty clay loam	20 - 40	moderate	slow	slow to rapid	sligh to high
Fathom	Xerollic Calciorthids, sandy, mixed, mesic	basalt terraces 0-20	wind modified alluvium	loamy fine sand	loamy fine sand	40 - 60	high	rapid	v. slow to slow	slight to moderate
Gaib	Lithic Ultic Argixerolls, loamy-skeletal, mixed, frigid	Hills 0-50	rhyolite and basalt	very gravelly loam	very cobbly sandy clay loam	10 - 20	very low	moderately slow	slow to rapid	slight to high
Gooding	Xerollic Paleargids, fine montmorillonitic, mesic	lava plains 0-20	loess & basalt	stony silt loam	silty clay	40 - 60+	very high	very slow	slow to rapid	slight to high
Houk	Argiaquic Xeric Argialbolls, fine montmorillonitic frigid	low stream terraces and stream bottoms 0-2	alluvium	clay loam	clay	60+	very high	slow	v. slow to slight	none
Karcal	Entic Chromoxererts, fine, montmorillonitic mesic	lava plains 0-50	basalt	very stony clay	clay	20 - 40	high	very slow	slow to medium	slight to moderate
Lanktree	Xerollic haplargids fine, montmorillonitic, mesic	terraces 0-20	alluvium	loam	clay loam	60+	very high	very slow	slow to rapid	slight to high
Lithgow	Xerollic Haplargids, loamy-skeletal, mixed mesic	hills 0-50	rhyolite	very gravelly loam	very gravelly clay loam	20 - 40	moderate	slow	slow to rapid	slight to high
Manard	Typic Durixerolls, fine, montmorillonitic, frigid	hills and lava plains 0-20	basalt	very stony	silty clay	20 - 40	moderate	very slow	slow to medium	slight to moderate
McCain	Xerollic Haplargids, fine-loamy, mixed, mesic	lava plains 0-20	loess and basalt	silt loam	silty clay loam	20 - 40	moderate	moderate	slow to rapid	slight to high
Old Camp	Lithic Haplargids, loamy-skeletal, mixed, mesic	hills and lava plains 0-50	rhyolite	gravelly loam	stony clay loam	10 - 20	very low	moderately slow	slow to very rapid	slight to very high
Paulville	Xerollic Haplargids, fine-loamy, mixed, mesic	lava plains 0-20	loess, alluvium, and basalt	fine sandy loam	sandy clay loam	40 - 60+	high	moderately slow	slow to rapid	slight to high
Polecreek	Lithic Ultic Argixerolls, clayey-skeletal, montmorillonitic, frigid	lava plains and hills 0-50	basalt and rhyolite	very gravelly loam	very cobbly clay	10 - 20	very slow	very slow	slow to rapid	slight to high
Power	Xerollic Haplargids, fine-silty, mixed, mesic	lava plains 0-20	loess and alluvium	silt loam	silty clay loam	60+	very high	moderately slow	slow to rapid	slight to high
Rehfield	Ultic Argixerolls, fine-loamy, mixed, mesic	lava plains 0-20	aeolian sands and basalt	fine sandy loam	loam	20 - 40	moderate	moderate	slow to medium	slight to moderate
Roanhide	Ultic Haploxerolls, coarse-loamy, mixed, frigid	hills and mountain slopes 4-50	granite	coarse sandy loam	coarse sandy loam	20 - 40	low	moderately rapid	slow to high	slight to high
Simonton	Ultic Argixerolls, fine-loamy, mixed, frigid	alluvial fans and terraces 0-20	alluvium	loam	sandy clay loam	60+	high	moderately slow	slow to rapid	slight to high
Truesdale	Haploxerollic Durothids, coarse-loamy, mixed, mesic	terraces 0-20	alluvium and lake sediments	fine sandy loam	fine sandy loam	20 - 40	moderate	moderately rapid	slow to medium	slight to moderate
Vickery	Xerollic Durorthids, fine-loamy, mixed, mesic	terraces 0-20	loess and alluvium	silt loam	silt loam	20 - 40	high	moderate	slow to rapid	slight to high
Yutrue	Vertic Xer[illegible]hrepts, fine, montmorillonitic, mesic	lava plains 0-50	basalt	clay	clay	40 - 60+	high	very slow	slow to rapid	slight to high



MAP 2–3

SOIL ASSOCIATION

LEGEND

☐ FOOTHILL AND MOUNTAIN SOILS
1. Roanhide–Earcree
2. Gaib–Elkcreek
3. Old Camp–Rock Outcrop–Lithgow

☐ SOILS ON LAVA PLAINS
4. Manard–Polecreek–Rock Outcrop
5. Paulville–Rock Outcrop–McCain
6. Karcal–Yutrue–Bostrum
7. Deerhorn–Rehfield
8. Gooding–Power–Rock Outcrop

☐ ALLUVIAL SOILS
9. Truesdale–Ephrata–Fathom
10. Simonton–Houk
11. Vickery–Lanktree–Eusbio

☐ RECENT LAVA AND ROCK OUTCROP
12. Lava and Rock Outcrop

Earcree soils are mainly found on north- and east-facing slopes. They are very deep, well-drained soils that formed in granitic colluvium and alluvium. In a typical Earcree profile, the surface layer is dark grayish-brown and grayish-brown gravelly coarse sandy loam 33 inches thick. The substratum is 31 inches thick, the upper 17 inches is light brownish-gray gravelly loamy coarse sand, and the lower 14 inches is light yellowish-brown loamy coarse sand.

The minor soils constitute 15 percent of this association: 10 percent is a soil similar to Roanhide that is less than 20 inches to bedrock, and 5 percent is rock outcrop.

The soils in this association are used for livestock grazing and wildlife habitat and have a total production of about 1,100 pounds/acre/year.

2. Gaib-Elkcreek. The major soils in this association are on hills at elevations of 4,800 to 6,800 feet. Slopes range from 0 to 50 percent. The average annual precipitation is about 14 inches, average annual air temperature is 41 degrees Fahrenheit, and average frost-free season is about 80 days.

This soil association makes up about 19 percent of the survey area, and is approximately 40 percent Gaib and 30 percent Elkcreek. The rest consist of minor soils.

Gaib soils are on ridgetops and convex side slopes. They are shallow, well-drained soils formed in residuum weathered from rhyolite or basalt. In a typical profile, the surface layer is grayish-brown very gravelly loam 4 inches thick. The subsoil grades from brown very cobbly sandy clay loam to stony clay loam over bedrock at 13 inches.

Elkcreek soils are on side slopes and in swales. They are moderately deep, well-drained soils formed in residuum weathered from rhyolite or basalt. In a typical profile, the surface layer is dark grayish-brown and brown loam 12 inches thick. The subsoil is brown and pale brown clay loam 19 inches thick over bedrock at 31 inches.

The minor soils make up 30 percent of this association: 15 percent is a soil similar to Elkcreek that is cooler and more productive on north slopes, 10 percent is rock outcrop, and 5 percent is Simonton (see Number 10 below).

This association is used for livestock grazing and wildlife habitat and has a total production of about 700 pounds/acre/year.

3. Old Camp-Rock Outcrop-Lithgow. This association consists of soils on hills at elevations of 3,500 to 6,000 feet. Slopes range from 0 to 50 percent. The average annual precipitation is about 11 inches, average annual air temperature is about 50 degrees Fahrenheit, and average frost-free season is about 100 days.

This association makes up about 9 percent of the survey area. It is approximately 30 percent Old Camp, 25 percent rock outcrop and 20 percent Lithgow. The rest consists of minor soils.

Old Camp soils occur on ridgetops and convex sideslopes near rock outcrops. They are shallow, well-drained soils formed in residuum from rhyolite. In a typical profile, the surface layer is very pale brown gravelly loam 4 inches thick. The subsoil is pale brown and brown gravelly clay loam and stony clay loam 14 inches thick over bedrock at 18 inches.

Rock outcrop consists of rhyolitic outcrops and areas of very shallow soil material over bedrock that support little or no vegetation.

Lithgow soils occur on side slopes and are moderately deep, well-drained soils formed in residuum weathered from rhyolite. In a typical profile, the surface layer is pale brown, very gravelly loam 12 inches thick. The subsoil is 21 inches thick, the upper 15 inches is yellowish-brown very gravelly clay loam, and the lower 6 inches is light yellowish-brown very stony clay loam over fractured bedrock at 33 inches.

The minor soils constitute 25 percent of this soil association: 10 percent is a soil similar to Gooding (see Number 8 below) that is 20 to 40 inches to basalt; 10 percent is a soil similar to Elkcreek but warmer; and 5 percent is a soil similar to Lithgow that is greater than 60 inches deep, is more productive, and occurs on alluvial and colluvial fans.

This soil association is used primarily for livestock grazing and wildlife habitat and has a total production of about 450 pounds/acre/year.

Soils on Lava Plains

This group consists of shallow to very deep, well-drained soils on nearly level to moderately steep slopes. They have formed in residuum weathered from basalt and rhyolite, local alluvium, and aeolian silts (loess) and sands. Textures range from sandy loam and silt loam to clay.

4. Manard-Polecreek-Rock Outcrop. Soils in this association are found on lava plains and low hills at elevations of 4,800 to 6,000 feet. Slopes range from 0 to 20 percent. The average annual precipitation is about 14 inches, average annual air temperature is about 41 degrees Fahrenheit, and frost-free period is about 85 days.

This association makes up about 9 percent of the survey area. It is approximately 40 percent Manard, 20 percent Polecreek, and 15 percent rock outcrop. The rest consists of minor soils.

Manard soils occur on broad, convex slopes. They are moderately deep, well-drained soils formed in residuum weathered from basalt. In a typical profile, the surface layer is grayish-brown very stony silt loam and silty clay loam 9 inches thick. The subsoil is 17 inches thick. The upper 9 inches is pale brown silty clay loam, and the lower 8 inches is light-yellowish-brown silty clay. The substratum is a white, silica-cemented hardpan 2 inches thick over bedrock at 28 inches.

Polecreek soils are found on convex ridges and side slopes near rock outcrops. They are shallow, well-drained soils formed in residuum weathered from rhyolite or basalt. In a typical Polecreek soil profile the surface layer is brown, very gravelly or very cobbly loam 9 inches thick. The subsoil is light-brown very cobbly clay over bedrock at 18 inches.

Rock outcrop consists of outcrops of basalt or rhyolite and areas of very shallow material over bedrock that support little or no vegetation.

The minor soils constitute 25 percent of this soil association: 10 percent is a soil similar to Karcal (see Number 6 below) along concave drainageways, 10 percent is an unnamed deep soil that formed in aeolian sand over weathered basalt, and 5 percent is a soil similar to Simonton (see Number 10 below) that has a clay subsoil.

The soils in this association are used for livestock grazing and wildlife habitat and have a total production of about 400 pounds/acre/year.

5. Paulville-Rock Outcrop-McCain. This association consists of soils on lava plains at elevations of 2,800 to 4,000 feet. Slopes range from 0 to 20 percent. The average annual precipitation is about 10 inches, average annual air temperature is about 50 degrees Fahrenheit, and the frost-free period is about 130 days.

The association comprises approximately 7 percent of the survey area. It is about 50 percent Paulville, 20 percent rock outcrop, and 20 percent McCain. The rest consists of minor soils.

Paulville soils occur on concave slopes. They are very deep, well-drained soils formed in loess over basalt. In a typical profile, the surface layer is a brown fine sandy loam 7 inches thick. The subsoil is 17 inches thick and consists of brown sandy clay loam in the upper part and brown fine sandy loam in the lower part. The substratum is 36 inches thick. In sequence from the top, the upper layer is pale-brown fine sandy loam 12 inches thick; the next layer is light-brownish-gray fine sandy loam 16 inches thick; and the lower layer is light-gray, calcareous fine sandy loam to 60 inches.

Rock outcrop consists of outcrops of basalt and areas of very shallow soil material over bedrock that supports little or no vegetation.

McCain soils are found on convex ridges. They are moderately deep, well-drained soils formed in loess over basalt. In a typical McCain profile, the surface layer is light-brownish-gray silt loam about 8 inches thick. The subsoil is brown silty clay loam about 16 inches thick. The substratum is light gray, calcareous silt loam about 4 inches thick over bedrock.

The minor soils make up 10 percent of this association: 5 percent is a soil similar to McCain that is less than 20 inches to bedrock, and 5 percent is another soil similar to McCain that has a sandy loam texture.

This soil association is used mostly for livestock grazing and wildlife habitat and has a total production of about 600 pounds/acre/year.

6. Karcal-Yutrue-Bostrum. These soils are found on lava plains at elevations of 3,300 to 5,400 feet. They occur in mound-intermound areas. Slopes range from 0 to 20 percent. The average annual precipitation ranges from 10 to 14 inches, average annual air temperature is about 50 degrees Fahrenheit, and the frost-free period is about 100 days.

This association makes up about 24 percent of the survey area. It is about 25 percent Karcal, 20 percent Yutrue, and 20 percent Bostrum. The rest consist of minor soils.

Karcal soils are located on intermound areas and along concave drainageways. They are moderately deep, well-drained soils formed in residuum from basalt. In a typical Karcal profile, the surface layer is grayish-brown very stony clay 1 to 2 inches thick. The underlying layer is brown clay 22 inches thick. The next underlying layer is yellowish-brown silty clay loam 4 inches thick. The substratum is very pale-brown silty clay loam 1 inch thick over bedrock at 28 inches.

Yutrue soils occur on intermound areas and along concave drainageways. They are very deep, well-drained soils formed in residuum and alluvium weathered from basalt. In a typical profile, the upper surface layer is light-brownish-gray stony clay about 2 inches thick. The lower surface layer is light-brownish-gray clay about 24 inches thick. The next layer is pale-brown silty clay loam 9 inches thick. The substratum is pale-brown and brown silt loam about 33 inches thick.

Bostrum soils are on intermound areas, ridgetops, and side slopes. They are moderately deep, well-drained soils formed in residuum weathered from basalt. In a typical profile, the surface layer is light-brownish-gray gravelly silt loam 5 inches thick. The subsurface layer is light-gray silt loam 3 inches thick. The upper subsoil is brown silty clay 11 inches thick. The lower subsoil is light-yellowish-brown silty clay loam 10 inches thick. Bedrock is at 29 inches.

The minor soils make up 35 percent of this association: 15 percent is rock outcrop; 10 percent is Gooding (see Number 8 below) in mound areas; and 10 percent is a very deep soil similar to Gooding that is moister, more productive, and also found in mound positions.

This soil association is used for livestock grazing and wildlife habitat and has a total production of about 600 pounds/acre/year.

7. Deerhorn-Rehfield-Rock Outcrop. The soils in this association are on lava plains at elevations of 4,000 to 5,000 feet. Slopes range from 0 to 20 percent. The average annual

precipitation is about 14 inches, average annual air temperature is about 49 degrees Fahrenheit, and the frost-free season is about 100 days.

This association makes up about 7 percent of the survey area. It is about 40 percent Deerhorn, 20 percent Rehfield, and 20 percent rock outcrop. Minor soils make up the remainder.

Deerhorn soils are on convex ridges and slopes. They are moderately deep, well-drained soils formed in aeolian sands over basalt. In a typical profile, the surface layer is brown fine sandy loam 10 inches thick. The subsoil is 7 inches thick; it is brown fine sandy loam in the upper part and brown loam in the lower part. The substratum is 9 inches thick; it is white loam in the upper part and white lime-silica-cemented hardpan in the lower part over bedrock at 26 inches.

Rehfield soils are found in concave depressions. They are moderately deep, well-drained soils formed in aeolian sands over residuum from basalt. In a typical profile, the surface layer is grayish-brown and brown fine sandy loam 10 inches thick. The subsoil is pale brown loam 6 inches thick. The substratum is pale-brown fine sandy loam 9 inches thick over bedrock at 25 inches.

Rock outcrop consists of outcrops of basalt and very shallow soil material over bedrock that supports little or no vegetation.

The minor soils constitute 20 percent of this soil association: 10 percent is a soil similar to Deerhorn that is less than 20 inches to bedrock; 5 percent is a soil similar to Rehfield that is less than 20 inches to bedrock; and 5 percent is a shallow, unnamed alkali soil.

The soils in this association are used for livestock grazing and wildlife habitat and have a total production of about 650 pounds/acre/year.

8. Gooding-Power-Rock Outcrop. The soils in this association are on lava plains at elevations of 3,000 to 5,000 feet. They occur in mound-intermound areas. Slopes range from 0 to 20 percent. The average annual precipitation is about 10 inches, average annual air temperature is about 51 degrees Fahrenheit, and the frost-free season is about 110 days.

This association makes up about 10 percent of the survey area. It includes approximately 45 percent Gooding, 20 percent Power, and 20 percent rock outcrop. The rest consists of minor soils.

Gooding soils are found in intermound areas. They are very deep, well-drained soils formed in loess over weathered basalt. In a typical profile, the surface layer is pale-brown or very pale-brown stony silt loam about 8 inches thick. The subsoil is 56 inches thick. In sequence from the top, the upper 10 inches is dark-yellowish-brown or yellowish-brown silty clay, the next 8 inches is brown silty clay loam, and the lower 38 inches is brown clay or silty clay.

Power soils occur on convex mounds. They are very deep, well-drained soils formed in loess over weathered basalt. In a typical profile, the surface layer is pale-brown silt loam 7 inches thick. The subsoil is pale-brown silty clay loam 23 inches thick. The substratum is very pale-brown, calcareous silt loam 30 inches thick.

Rock outcrop consists of outcrops of basalt and areas of very shallow soil material over bedrock that support little or no vegetation.

The minor soils make up 15 percent of this association: 10 percent is Yutrue along concave drainageways, and 5 percent is an unnamed salt-affected soil that is barren.

This association is used mostly for livestock grazing and wildlife habitat and has a total production of about 500 pounds/acre/year.

Alluvial Soils

Alluvium, terraces, and escarpments compose this group. The soils are moderately deep to very deep, mostly well drained, coarse to fine textured, and have formed in water-deposited materials.

9. Truesdale-Ephrata-Fathom. This soil association consists of soils on lake terraces and low basalt terraces adjacent to the Snake River. Elevation is 2,500 to 3,500 feet, and slopes range from 0 to 80 percent but are mostly less than 20 percent. The average annual precipitation is about 10 inches, average annual air temperature is about 51 degrees Fahrenheit, and the frost-free season is about 140 days.

The association makes up about 1 percent of the survey area. It is 35 percent Truesdale, 30 percent Ephrata, and 20 percent Fathom. Minor soils make up the remainder.

Truesdale soils occur on lake terraces. They are moderately deep, well-drained soils formed in alluvium or lacustrine sediments from mixed souces. In a typical profile, the surface layer is brown fine sandy loam 7 inches thick. The underlying layer is pale-brown fine sandy loam 12 inches thick. The substratum is 39 inches thick. The upper 11 inches is very pale-brown, calcareous sandy loam. The next 5 inches is a weakly to strongly lime-silica-cemented layer. The lower 23 inches is white and very pale-brown stratified loamy sand and sandy loam with 5 to 35 percent gravels.

Ephrata soils are on low basalt terraces. They are very deep, well-drained soils formed in mixed alluvium. In a typical Ephrata profile, the surface layer is brown sandy loam about 6 inches thick. The underlying layer is brown sandy loam about 19 inches thick. The substratum is grayish-brown basaltic sands and gravels which extend to 60 inches or more.

Fathom soils are located on low basalt terraces. They are deep, somewhat excessively drained soils formed in wind-modified alluvium. In a typical profile, the surface layer is brown loamy fine sand about 10 inches thick. The underlying layer is pale-brown loamy fine sand about 10 inches thick. The substratum is pale-brown, calcareous loamy fine sand to 60 inches.

The minor soils make up 15 percent of this association: 5 percent is talus, 5 percent is unstable sand dunes, and 5 percent is rock outcrop and shallow soils similar to Truesdale and Fathom.

This soil association is used for livestock grazing and wildlife habitat and has a total production of about 650 pounds/acre/year.

10. Simonton-Houk. Soils in this association are found on alluvial fans and stream bottoms at elevations of 4,800 to 6,000 feet. Slopes range from 0 to 20 percent. The average annual precipitation is about 14 inches, average annual air temperature is about 42 degrees Fahrenheit, and the average frost-free period is about 85 days.

This association makes up about 1 percent of the survey area. It is 60 percent Simonton and 25 percent Houk. The rest consists of minor soils.

Simonton soils are found on alluvial fans. They are very deep, well-drained soils formed in mixed alluvium. In a typical profile, the surface layer is grayish-brown loam 10 inches thick. The subsoil is 27 inches thick. The upper 5 inches is pinkish-gray sandy clay loam, and the lower 22 inches is light-brown sandy clay loam. The substratum is light-gray loamy sand 23 inches thick.

Houk soils occur on low stream terraces and stream bottoms. They are very deep, somewhat poorly drained soils formed in mixed alluvium. In a typical profile, the surface layer is gray clay loam 8 inches thick. The subsurface layer is light gray silt loam 8 inches thick. The subsoil is 33 inches thick. In sequence from the top, it consists of 12 inches of dark-gray silty clay, 6 inches of dark-gray clay, 7 inches of calcareous gray clay, and 8 inches of calcareous gray clay loam. The substratum is 15 inches thick. The upper layer is light-gray, calcareous sandy loam 11 inches thick, and the lower layer is gray sandy loam.

The minor soils constitute 15 percent of this association: 5 percent is a soil similar to Simonton that has a clay subsoil, 5 percent is Elkcreek, and 5 percent is Roanhide.

This soil association is used mostly for livestock grazing and wildlife habitat and has a total production of about 1,400 pounds/acre/year.

11. Vickery-Lanktree-Eusbio. This association consists of soils on old dissected terraces at elevations of 3,000 to 4,500 feet. Slopes range from 0 to 50 percent, but most are less than 20 percent. The average annual precipitation is about 10 inches, average annual air temperature is 51 degrees Fahrenheit, and the average frost-free season is about 110 days.

The association makes up about 5 percent of the survey area. It is 25 percent Vickery, 20 percent Lanktree, and 20 percent Eusbio. The rest consists of minor soils.

Vickery soils are located on convex slopes and mounds. They are moderately deep, well-drained soils formed in loess over alluvium. In a typical profile, the surface layer is light-brownish-gray silt loam 10 inches thick. The subsoil is light-brownish-gray silt loam 15 inches thick. The substratum is light-brownish-gray calcareous loam over an indurated lime-silica hardpan at 34 inches.

Lanktree soils are on convex slopes and mounds. They are very deep, well-drained soils formed in old unconsolidated alluvium. In a typical profile, the surface layer is light-brownish-gray loam 8 inches thick. The subsoil is brown and pale-brown clay loam 14 inches thick. The substratum consists of 15 inches of pale-brown loam in the upper part and 23 inches of light-gray loam in the lower part.

Eusbio soils occur on sideslopes along Clover Creek. They are moderately deep, well-drained soils formed in residuum and colluvium derived from siltstone that is mixed with loess in places. In a typical Eusbio profile, the surface layer is light-brownish-gray and brown silt loam 7 inches thick. The subsoil is 17 inches thick; the upper 7 inches is light-grayish-brown silty clay loam; the lower 10 inches is light-gray silty clay loam. The substratum is white and gray calcareous siltstone to 29 inches.

The minor soils make up 35 percent of this soil association: 15 percent is a soil similar to Gooding that has a lime-silica cemented hardpan at 20 to 40 inches found in concave intermound areas, 10 percent is badlands that consist of barren or nearly barren severely eroded areas, 5 percent is Power in mound positions, and 5 percent is Yutrue along concave drainageways.

The soils in this association are used mainly for livestock grazing and wildlife habitat and have a total production of about 700 pounds/acre/year.

Recent Lava and Rock Outcrop

This group consists of Recent nearly barren to barren lava flows and areas of exposed bedrock. Little soil exists within this unit.

12. Lava and Rock Outcrop. This association consists primarily of recent lava flows and exposed areas of bedrock and makes up about 7 percent of the survey area. It is 60 percent lava flows, 30 percent rock outcrop, and 10 percent soil material.

Soils are sparse and shallow and found mainly in cracks and depressions. Some abandoned drainageways have moderately deep and deep sandy loam to gravelly soils. Erosion is minimal because most precipitation is drained within the rock formation. Soils are of mixed origin.

Only about 10 percent of this association is suitable for livestock grazing, but it does receive use as wildlife habitat. It has a total production of about 100 pounds/acre/year.

Water Erosion

Erosion rates were determined using the Musgrave Equation (see Appendix 2). Sediment is being removed from the soil surface (sheet and rill erosion) at an average rate of approximately 1.0 acre-feet per square mile per year within the ES Area. It is deposited locally in stream channels or in basins downstream. This is considered a high erosion rate. Table 2-4 gives present erosion rates in each allotment. Twenty-six allotments including 378,952 acres have high erosion rates, fifteen allotments including 185,368 acres have moderate erosion rates, and one allotment including 310 acres has a low erosion rate.

Wind Erosion

In the ES Area, the sandy and sandy loam soils of associations Number 7 and 9 are subject to wind erosion. Association Number 7 occurs in the Timmerman East and Tikura Allotments. The soils of association Number 9 are within the King Hill, Pioneer, Fricke, 101, and The Pasture Allotments. Studies to determine the actual amount of wind erosion have not been conducted. Therefore, actual wind erosion rates are not presently known.

WATER RESOURCES

Water Supply and Use

The Shoshone ES Area comprises about 3 percent of the 28,320 square mile Upper Snake River Basin. The Snake River Basin has an estimated annual water yield of about 4 million acre-feet of which about 342,000 acre-feet is recorded as runoff (Water Resources Institute 1968). Agriculture, with annual consumptive use requirements of nearly 3 million acre-feet, represents the single greatest use of water in the Upper Snake River Basin. Irrigation represents approximately 97 percent of the water consumptively used (excluding evaporation). Major reservoirs and lakes in the area are listed in Table 2-19 (see "Fisheries" section in this chapter).

Many streams in the ES Area are diverted for irrigation use. Rabe, F. W., R. L. Wallace, N. L. Savage, T. N. Newlon, and S. Krueger (1976) identified the major streams (see "Fisheries" section) in the ES Area as having dewatering problems. For example,

TABLE 2-4

SUMMARY OF EXISTING EROSION RATES BY ALLOTMENT

ALLOTMENT NAME	PRESENT EROSION RATE 1/ (ac ft/sq mi/yr)	ALLOTMENT NAME	PRESENT EROSION RATE 1/ (ac ft/sq mi/yr)
Black Buttes	0.97	North Shoshone	1.08
Black Canyon	0.95	North Slope	1.51
Canal	1.03	Picabo	1.42
Clover Creek	1.12	Pioneer	0.78
Compound	0.97	Poison Creek	1.09
Cove Creek	0.94	Rattlesnake	1.23
Davis Mountain	1.44	Richfield Cattle	0.85
Dempsey	1.13	Schooler Creek	0.67
Fricke	0.41	Spud Patch	1.97
Gwin Ranch	1.86	Spring Creek	0.66
Hash Spring	0.78	Springdale	0.23
Hill City Branch	0.97	Struthers	1.14
Indian	1.05	Swinging Bridge	1.13
Kime	0.96	The Pasture	0.38
King Hill	1.31	Ticeska	0.55
Kinzie Butte	2.18	Tikura	0.59
Lava	0.32	Timmerman East	0.81
Lower Magic	1.32	Timmerman West	1.22
Macon Flat	0.44	Track	1.32
Magic	1.23	"46"	0.64
North Gooding	0.84	"101"	0.31
		ES Area Average	1.00

1/ Erosion rates were calculated by the Musgrave Equation, as explained in Appendix 2. The Sediment Yield Rating System (USDI, BLM 1976) defines erosion classes based on the erosion rate in acre-feet per square mile per year (ac ft/sq mi/yr) as follows: 0 to .13 is low, .30 to .90 is moderate, and more than .90 is high.

the report indicated that the Big Wood River below Magic Reservoir has a flow of 402 cubic feet per second (cfs), while the lower stretch of the river is reduced to 7 cfs by the diversion of the Richfield Canal. Livestock water use represents a very small portion of the available water supply. For example, of the 2.5 million acre-feet of groundwater withdrawn from the Upper Snake River Basin annually, only 6,000 acre-feet (0.24 percent) is consumptively used by livestock (WRI 1968, Young 1971).

Based upon the five-year average licensed use (approximately 59,000 AUMs) at 330 gallons per AUM, an estimated 60 acre-feet of water is required by livestock in the ES Area each year. Total water requirements for livestock and terrestrial wildlife probably does not exceed 80 acre-feet per year. Assuming 20 acre-feet per year evaporation loss from stock reservoirs, total water consumption resulting from livestock grazing practices is less than 100 acre-feet per year. Presently, water supply for livestock via springs, wells, and reservoirs is sufficient; additional water developments included in the Proposed Action (see Table 1-8 and Map 1-2) are needed merely to improve livestock distribution.

Groundwater

The basaltic Snake River Aquifer underlies most of the ES Area. This aquifer has a high productivity potential. Yields of 1,000-3,000 gallons per minute can be expected with only a few feet of drawdown (WRI 1968). The Snake River Aquifer's estimated storage is about 3,000 acre-feet/square mile which would total over 27 million acre-feet in the Upper Snake River Basin. Groundwater development has been fairly extensive in the Snake River Plain of Lincoln and Gooding counties (southern portion of ES Area) but not in Camas, Blaine, and Elmore counties (northern and western portions of ES Area) (WRI 1968).

Water quality is generally good in the Snake River Aquifer with total dissolved solids being less than 500 milligrams per liter (mg/l), a suggested limit for drinking water (U.S. Public Health Service 1962).

Surface Water and Runoff

The ES Area drains into the Snake River. Major drainages are shown on Map 2-4 and their estimated average yield is shown in Table 2-5, Estimated Average Runoff. Runoff is difficult to predict unless adequate stationing is provided on a drainage. Six USGS gaging stations are located within the ES Area. Unfortunately, many agricultural diversions exist, making accurate surface water runoff predictions difficult. Few perennial streams originate in the ES Area and most streams are ephemeral, carrying water only during periods of snowmelt or intense precipitation. In the area of the Timmerman Hills Watershed, "Native vegetative cover transpires nearly all of the water derived from precipitation that falls on the area above the valley floor except for that falling during heavy rainstorms" (Castelin 1972, p. 35). This is typical of arid or semiarid environments.

TABLE 2-5

ESTIMATED AVERAGE ANNUAL RUNOFF

WATERSHED AREA	ACRES 1/	RUNOFF INCHES 2/	RUNOFF ACRE FEET 3/
001 West Clover Creek	115,604	.55	5,299
002 East Clover Creek	42,593	1.27	4,508
003 Dry Creek	74,074	.80	4,938
004 Thorn Creek	65,773	1.14	6,248
005 Bliss Area	38,314	.50	1,596
011 Timmerman Hills	142,617	.34	4,041
012 East Bennett	100,278	.85	7,103
019 Mormon Reservoir	50,448	1,17	4,919
020 Camas Creek	8,876	1.87	1,383
Total	638,577		40,035

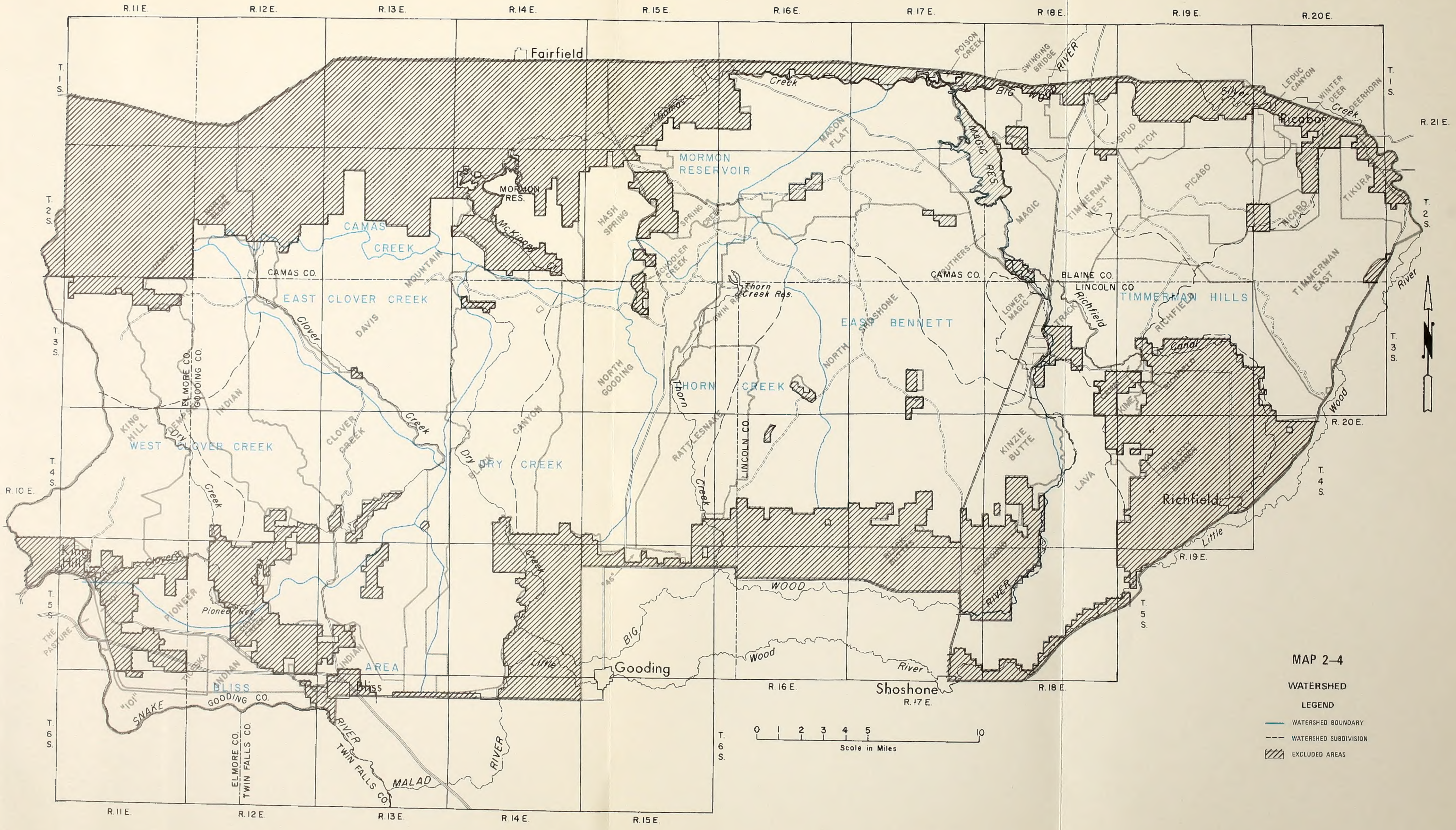
1/ Includes all lands inside allotment boundaries, plus unallotted public land.

2/ Represents average depth of total annual runoff water within the watershed. Source: Bureau of Land Management, Shoshone District, Unit Resource Analysis. Estimated using Columbia-North Pacific Region Comprehensive Framework Study, 1970.

3/ Represents total volume of water in units which would cover one acre a foot deep.

Water Quality

Water quality data for the ES Area, especially that which could be helpful in addressing impacts from livestock grazing, are very limited. General studies conducted within the ES Area include those by Rabe, et al. (1976) and Environmental Protection Agency (1976). EPA (1976), in its water quality assessment of the Upper Snake River Basin, rated the water quality of the Big Wood and Little Wood Rivers. Results are presented in Table 2-6. The Big Wood River was shown to have unacceptable levels (higher than recommended standards) of phosphorus, nitrates, ammonia, and bacteria, which are constituents associated with agriculture and other practices involving nutrient and biological wastes. As a result of the high levels, the quality of the water for use in agriculture, fish, wildlife, and recreation was rated as objectionable (meaning a marginally tolerable situation). In the EPA (1976) study the causes of water quality problems in the Big and Little Wood Rivers were identified as: (1) excessive diversion, (2) agriculture, (3) turbidity, (4) pH, (5) overgrazing, and (6) poor



MAP 2–4

WATERSHED

LEGEND

TABLE 2-6

WATER QUALITY ASSESSMENT
OF THE UPPER
SNAKE RIVER BASIN

	TEMPER-ATURE	DIS-SOLVED OXYGEN	pH	TUR-BIDITY	PHOS-PHOROUS	NITRATES	AMMONIA	BAC-TERIA	AGRI-CULTURE	FISH AND WILDLIFE	RECREATION
Big Wood River to Magic Dam	A	A	0	--	NA	0	A	--	A	0	0
Big Wood River to Magic Res. to Source	0	A	A	A	NA	NA	NA	NA	0	0	0
Little Wood River Source to Big Wood River	--	--	--	--	--	--	--	--	0	0	0

0 - Objectionable; A - Acceptable; NA - Not acceptable; -- Not evaluated

Source: EPA (1976)

land management in the lower reaches. It is interesting to note that of the approximately 33 miles of Big Wood River in the ES Area, about two-thirds is bordered by private or State lands. Similarly, more than 90 percent of the Little Wood River within the ES Area is bordered by private or State lands.

During a two-week period in the summer of 1976, Rabe, et al. (1976) evaluated nine streams, totaling 70 miles in length, that are considered to be all of the important perennial and intermittent waters in the ES Area: King Hill Creek, Dry Creek, East Dempsey Creek, Hog Creek, Clover Creek, Dry Creek, Big Wood River, Camas Creek, and Silver Creek. Although only limited information was collected, including basic chemical, physical, and biological data, it does give some indication about the quality of the waters (see Table 2-7). Basic water quality standards have been established to enable one to assess the water's capability to support various uses. Table 2-8 gives general standards for drinking water, aquatic life, livestock, and recreation relative to Rabe's data. Comparison of Table 2-7 and 2-8 shows that some temperature values exceed those recommended for fisheries, but most other reported values have little or no significance in assessing water quality impacts related to livestock grazing.

Macroinvertebrates can provide good indicators for the biological suitability or quality of water, acting as long-term water monitoring stations. Certain organisms are tolerant of poor water quality while the existence of others indicates good quality. The limited data collected by Rabe, et al. (1976) indicated that most waters are probably of good quality; however, some may not provide the quality necessary for a diverse community. Such quality requirements are related to temperature, timing and quantity of flows, chemical composition, sediment, solar incidence, etc. Much more information would be required to completely describe the quality of the waters surveyed.

Some studies exist that relate livestock grazing intensity to actual instream sediment production, although many investigators have shown possible sediment-related problems (fish production, etc.), to be minimized by the removal of livestock from riparian zones (Cordone and Kelly 1961, Duff 1977). Sediment can originate from both adjacent watersheds and stream channels, however, the cause of such sedimentation is not always apparent. Separating the "natural" fraction from the "induced" involves in-depth study and analysis which has not been researched in the ES Area. Rabe, et al. (1976) did not have any quantifiable data on sediment and siltation but observed that many streams showed completely or heavily silted stream bottoms. He also indicated that some of the sedimentation could be attributed to livestock grazing. Present grazing practices on public lands may be causing significant sedimentation of stream channels in the ES Area. However, the non-BLM administered lands directly adjacent to many of the major streams are also suspected of making a significant contribution to the sediment problems observed by Rabe.

TABLE 2-7

WATER QUALITY DATA 2/ FOR SAMPLING STATIONS ON BLM LAND IN THE SHOSHONE ES AREA - SAMPLING WAS CONDUCTED IN JULY AND AUGUST, 1976 (Rabe 1976)

Stream	Water Temp. °F	pH	Total Alkalinity (ppm $CaCo_3$)	Turbidity (NTUs)	Total Hardness (ppm)	Ca (ppm)	Mg (ppm)	Stream Miles		(Ft ^{3}/Sec)	Number of Samples
								BLM	Total		
King Hill Creek	69-72	7.6-8.4	37-108	.5-.7	5.8-26.4	3.8-17.1	2.0-9.3	11.9	19.5	.8-4	3
Dry Creek	66	7.5	78	.9	9.8	3.5	6.3	8	18	< 1	1
E. Dempsey Creek	78	9.0	40	.7	5.5	2.6	2.9	5.2	10	< 1	1
Hog Creek	75	7.8-7.9	159-198	.5-1.1	39.4-48.2	8.8-22.5	20.6-25.7	7.2	8.5	.1	2
Clover Creek	68-84	7.4-8.8	33-156	.5-2.1	2.6-12.2	.8- 5.1	1.8- 7.5	15.6	40	≤ 7-31	7 5/
Dry Creek 1/	62-78	7.3-9.0	40-51	.2-1.9	.0- 2.5	.4- .9	.6- 1.8	9.2	16	.1-1	4
Big Wood River	59-60	7.8-8.2	82-88	.3- .9	37.3-49.6	31. -43.2	6.2- 6.4	6	18	7.-402	3 3/
Camas Creek	60-78	8.0-8.3	84-93	1.6-1.8	15.5-17.2	9.3-11.2	6.0- 6.6	6.4	48	12 -19	3
Silver Creek	65	8.4	N.R. 4/	.9	74.3	58.6	15.7	0.5	12	168	1

1/ Tributary of Big Wood River
2. All values in table for ranges of reported values where more than one station was sampled.
3/ 402 cfs at middle station below Magic Reservoir, 7 cfs near ES Boundary
4/ Value not reported
5/ Flow of Clover Creek was below 7 cfs until the confluence with Hog Creek

pH - Measure of acidity or alkalinity
ppm $CaCo_3$- Parts per million Calcium Carbonate

NTU - Nethleometric turbidity units
ppm - Parts per million

TABLE 2-8

WATER QUALITY STANDARDS

PARAMETERS SAMPLED BY RABE (1976)	WATER USE				
	SALMONID SPAWNING 1/	COLD WATER BIOTA 1/	COLD WATER FISHERIES	DRINKING WATER 2/	RECREATION LIVESTOCK IRRIGATION
Temperature	< 13°C	< 22°C	< 20°C	N.S.	N.S.
pH	6.5-9.0	6.5-9.0	6.5-9 1/	N.S.	N.S.
Alkalinity (total)	N.S.	N.S.	> 20 3/	N.S.	N.S.
Turbidity (NTUs)	N.S.	N.S.	10 4/	1	N.S.
Hardness (total)	N.S.	N.S.	N.S.	N.S.	N.S.
Calcium	N.S.	N.S.	N.S.	N.S.	N.S.
Magnesium	N.S.	N.S.	N.S.	N.S.	N.S.
Dissolved Oxygen 6/	> 6 mg/l	> 6 mg/l	> 6 4/	N.S.	N.S.

N.S. = No Standard
Mg/l = Milligrams per liter; equivalent to parts per million as reported in Rabe's (1976) study

1/ Draft State of Idaho Water Quality Standards and Wastwater Treatment Requirements. Idaho Department of Health, Division of Environment, 1977.
2/ U.S. Public Health Service - Drinking Water Standards, 1968.
3/ U.S.F.S., 1968, R-3 Water Quality Interim Guidelines
4/ Water Quality Criteria, F.W.P.C.A., 1968
5/ National Interim Primary Drinking Water Standards, 1976
6/ Value not collected by Rabe during 1968 field season

VEGETATION

In this section the vegetation in the ES Area is grouped into broad zones, the zones are described, and a unique vegetation area is briefly discussed. Next, current production, condition, and trend of the vegetation is defined and described. Finally, endangered and threatened plants as well as those which are poisonous and noxious are discussed.

Vegetation Zones

Ten major vegetation zones occur within the boundaries of the ES Area. Map 2-5 shows the distribution of these zones. Table 2-9 shows the major vegetation zones and acres, the ecological sites found within the zones, the principal soil series, the effective moisture range, and the general location.

The entire ES Area lies within the Intermountain Shrub Region (Stoddart, L. A., A. D. Smith, and T. W. Box 1975). In this region many typical plant communities are composed of a sagebrush overstory with an understory of bunchgrass and forbs. The species of sagebrush is an important indicator of site-specific conditions. Because of the importance of individual sagebrush species as indicators of moisture conditions, depth of soil, soil drainages, etc., five of the ten major vegetation zones in the ES Area are named by the principal kind of sagebrush occurring in them.

Two of the other five zones are named from the extensive lava flows which are found in the ES Area. The riparian zone is confined to moist environments. The productive seeding zone reflects man's alteration of the environment by introducing exotic plant species. The agricultural zone includes both intensive and extensive agriculture, i.e., farm crops and livestock grazing on private land within the ES Area boundaries.

All the major zones except productive seedings, recent lava flows, and agricultural land are made up of a mosaic of ecological sites, with their characteristic vegetation, interspersed over the landscape. Thus, low sage may occur on shallow rocky soils within the broad Wyoming Big Sagebrush Zone, or Wyoming big sagebrush may occur on especially dry sites within the Mountain Big Sagebrush Zone.

Wyoming Big Sagebrush Zone

This zone encompasses the southern one-third of the ES Area west of State Highway 75 and the middle portion of the area east of State Highway 75.

Approximately 60 percent of this zone west of State Highway 75 is in a highly disturbed (very poor) ecological condition class because of a history of overgrazing, wildfire, and unsuccessful attempts at range rehabilitation. The highly disturbed condition is characterized by a vegetation type made up of annual grasses and weedy forbs with a nearly complete lack of overstory indicator shrubs like Wyoming big sagebrush. Ecological condition classes are defined under "Vegetation Condition" in this section.

Most of the remainder of this zone west of Highway 75 is in poor ecological condition. This condition class is normally characterized by a vegetation type having an overabundance of Wyoming big sagebrush with an understory made up of annual grasses and forbs. A few native understory plants may be present.

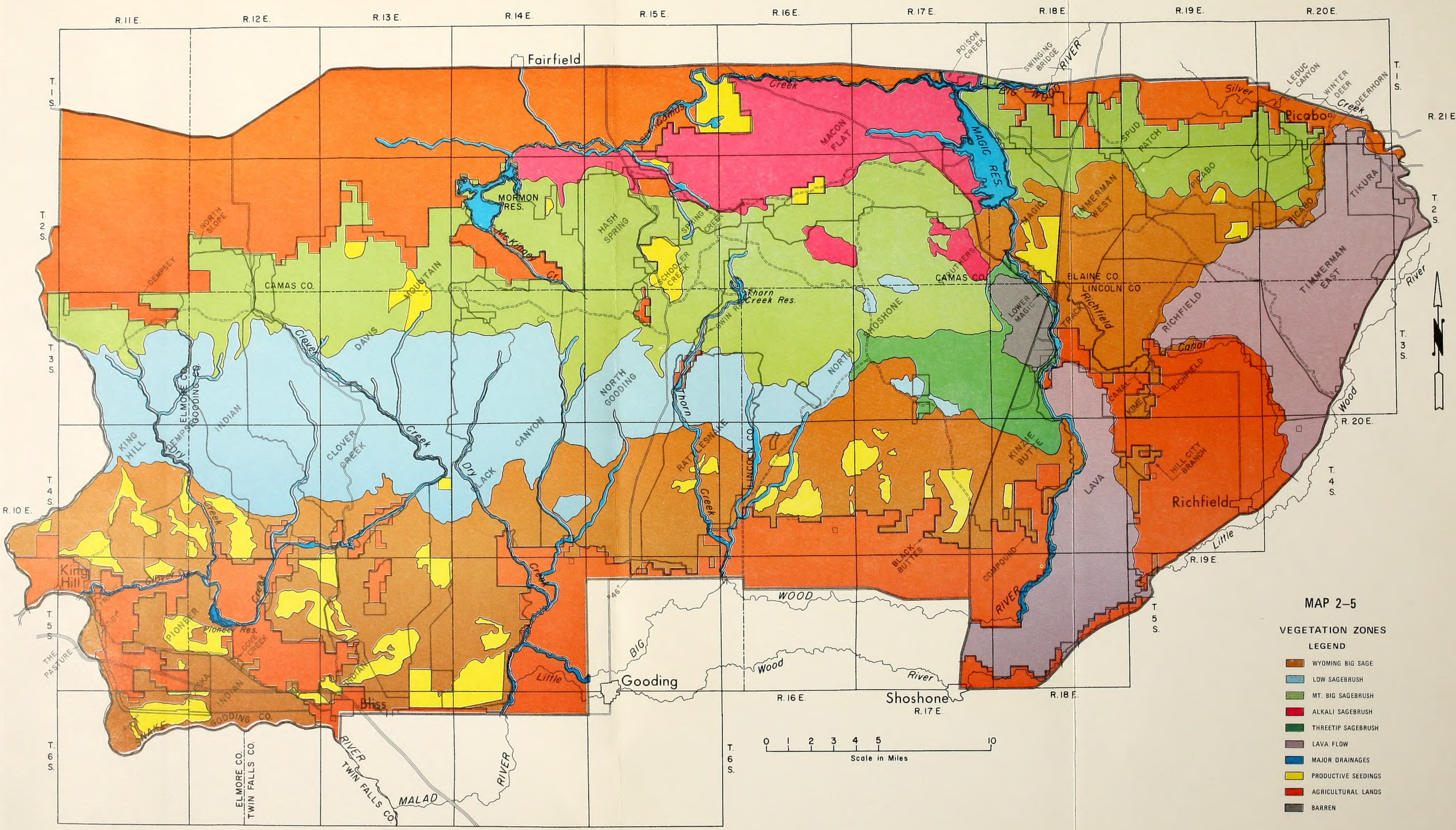
The portion of this zone lying east of State Highway 75 is in poor to fair ecological condition. The major existing vegetation type within this portion of the zone is made up of an overstory of Wyoming big sagebrush with an understory of cheatgrass, Sandberg's bluegrass, Thurber's needlegrass, bottlebrush squirreltail, and various annual and perennial forbs in lesser amounts. The understory species composition may vary considerably from place to place.

Basin big sagebrush, three-tip sagebrush, and low sagebrush vegetation types occur in lesser amounts as inclusions. Basin big sagebrush grows in deep well-drained loamy soil (Deerhorn series) or sandy soil (Fathom series) and is associated with the same understory vegetation as Wyoming big sagebrush. Three-tip sagebrush grows in moderately deep clay loam soils (Bostrum and Rehfield series) with a semirestrictive layer which produces a high water table each spring. Cheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, Thurber's needlegrass, basin wildrye, several species of bluegrass, and an assortment of annual and perennial forbs compose the understory to three-tip sagebrush. Low sagebrush occurs in the minor drainageways at the lower elevations (Karcal and Yutrue soil series) and in the intermounds of patterned ground at the higher elevations of the zone (Bostrum, Karcal and Yutrue soil series). The understory species associated with low sagebrush are bluebunch wheatgrass and Sandberg's bluegrass, as well as annual and perennial forb species.

Low Sagebrush Zone

This zone is associated with the shallow to moderately deep, stony, heavy-textured soils in the mid-elevational portion (4,400 to 5,400 feet) of the ES Area.

The ecological condition within the zone ranges from poor to good depending primarily on the grazing history. Wildfire is not a major factor influencing ecological condition in this zone as the vegetation is less continuous and has less total production than in some other zones. Production averages 431 pounds per acre of yearly plant growth including all grasses, forbs, and shrubs. Production is discussed in more detail under "Vegetation Production" in this section.



MAP 2–5

VEGETATION ZONES

LEGEND

TABLE 2-9

MAJOR VEGETATION ZONES AND ASSOCIATED ECOLOGICAL SITES
FOUND IN THE SHOSHONE ES AREA 1/

VEGETATION ZONES, ACRES WITHIN ZONES, AND PRINCIPAL ECOLOGICAL SITES FOUND IN THE ZONES	PRINCIPAL SOIL SERIES OR SOIL CHARACTERISTICS	EFFECTIVE MOISTURE RANGE FOR THE ECOLOGICAL SITES	GENERAL LOCATION OF ECOLOGICAL SITES WITHIN THE BROAD VEGETATION ZONE
Wyoming Big Sagebrush Zone - 174,795 acres			
- Wyoming big sagebrush - Thurber's needlegrass	Ephrata, Eusbio, Lanktree, Lithgow, McCain, Paulville, Power, Truesdale, Vickery	8" - 12"	Widely occurring
- Basin big sagebrush - Bluebunch wheatgrass	Deerhorn	12" - 16"	North slopes at higher elevations, along drainageways at lower elevations
- Wyoming big sagebrush - Sandberg bluegrass	Old Camp	8" - 12"	Widely occurring near rock outcrops
- Basin big sagebrush - Indian ricegrass	Fathom	8" - 12"	Near Snake River
- Wyoming big sagebrush - Bluebunch wheatgrass	Karcal, Yutrue	8" - 12"	Scattered throughout lower hills
- Low sagebrush - Bluebunch wheatgrass	Bostrum, Karcal, Yutrue	12" -16"	Intermounds at higher elevation, drainageways at lower elevation
- Three-tip sagebrush - Bluebunch wheatgrass	Bostrum, Rehfield	12" - 16"	Higher elevation concave areas
Low Sagebrush Zone - 102,424 acres			
- Low sagebrush - Bluebunch wheatgrass	Bostrum, Gaib, Karcal, Yutrue	12" - 16"	Widely occurring on north slopes
- Basin big sagebrush - Bluebunch wheatgrass	Elkcreek	12" - 16"	Major drainageways, pockets of deep well drained soil
- Wyoming big sagebrush - Thurber's needlegrass	Lithgow, Power	8" - 12"	Mounds - lower elevations
Mountain Big Sagebrush Zone - 137,985 acres			
- Mountain big sagebrush - Bluebunch wheatgrass	Elkcreek, Roanhide	12" - 16"	Widely occurring on south slopes
- Basin big sagebrush - Idaho fescue	Elkcreek, Simonton	12" - 16"	Widely occurring on gentle slopes and along drainages
- Mountain big sagebrush - Idaho fescue	Earcree	16" - 20"	North slopes
- Low sagebrush/Alkali sagebrush - Idaho fescue	Gaib, Manard, Polecreek	12" - 16"	Stony areas
- Silver sagebrush - Sedge	Houk	Subirrigated part of the growing season	Semi-wet meadows in mountain valley bottoms and depressions
- Tufted hairgrass - Willow	Unnamed poorly-drained mineral and/or organic soils	Subirrigated entire growing season	Wet meadows in mountain valley bottoms and depressions
Alkali Sagebrush Zone - 30,245 acres			
- Alkali sagebrush - Idaho fescue	Manard, Polecreek	12" - 16"	Widely occurring
- Basin big sagebrush - Idaho fescue	Simonton	12" - 16"	Mounds of deep well-drained soil; sandy soil of prehistoric beachlines
- Silver sagebrush - Sedge	Houk	Subirrigated part of the growing season	Semi-wet meadows in depressions and along drainages
- Tufted hairgrass - Willow	Unnamed poorly drained mineral and/or organic soils	Subirrigated entire growing season	Wet meadows in depressions and along drainages
- Low sagebrush - Bluebunch wheatgrass	Gaib	12" - 16"	Scattered shallow stony areas
Three-tip Sagebrush Zone - 12,640 acres			
- Three-tip sagebrush - Bluebunch wheatgrass	Bostrum, Rehfield	12" - 16"	Widely occurring
- Basin big sagebrush - Bluebunch wheatgrass	Deerhorn	12" - 16"	Deep well-drained soils
- Low sagebrush - Bluebunch wheatgrass	Bostrum, Karcal, Yutrue	12" - 16"	Stony soil areas
- Wyoming big sagebrush - Thurber's needlegrass	Paulville, Power	8" - 16"	Lower elevations

TABLE 2-9

MAJOR VEGETATION ZONES AND ASSOCIATED ECOLOGICAL SITES
FOUND IN THE SHOSHONE ES AREA 1/

VEGETATION ZONES, ACRES WITHIN ZONES, AND PRINCIPAL ECOLOGICAL SITES FOUND IN THE ZONES	PRINCIPAL SOIL SERIES OR SOIL CHARACTERISTICS	EFFECTIVE MOISTURE RANGE FOR THE ECOLOGICAL SITES	GENERAL LOCATION OF ECOLOGICAL SITES WITHIN THE BROAD VEGETATION ZONE
Lava Flow Complex Zone - 63,825 acres			
- Wyoming big sagebrush - Thurber's needlegrass	Unnamed shallow loamy soil, McCain, Paulville	8" - 12"	Top of lava flows on thin soil over fractured lava, along old river channels at lower elevations.
- Basin big sagebrush - Bluebunch wheatgrass	Unnamed mixed alluvium, Deerhorn	12" - 16"	Fissures and cracks in lava flow where soil has deposited, along Big and Little Wood Rivers with overflow deposits.
- Three-tip sagebrush - Bluebunch wheatgrass	Bostrum, Rehfield	12" - 16"	Depressions and along the edges of broken lava flows, widely occurring at higher elevations.
Major Drainages/Riparian Zone - 11,651 acres			
- Much variation exists within this zone. All possible ecological sites are not defined.	Unnamed poorly-drained mineral and/or organic soils	Moist to saturated	Major drainages, valley bottoms, depressions, near springs and seeps, along shorelines of man-made reservoirs, along irrigation canals.
Productive Seeding Zone - 36,878 acres			
- Wyoming big sagebrush - Thurber's needlegrass	Ephrata, Eusbio, Lanktree, Lithgow, McCain, Paulville, Power, Truesdale, Vickery	8" - 12"	Widely occurring; most seedings occur on this ecological site.
- Low sagebrush - Bluebunch wheatgrass	Bostrum, Karcal, Yutrue	12" - 16"	Widely scattered; very few successful seedings (seedings usually made on inclusions of better soil)
- Mountain big sagebrush - Idaho fescue	Earcree	16" - 20"	Widely scattered; not normally seeded as native vegetation is very productive, but when seeded, very productive.
- Three-tip sagebrush - Bluebunch wheatgrass	Bostrum	12" - 16"	Very widely scattered; heavy clay soil normally limits seeding productivity.
- Basin big sagebrush - Idaho fescue	Elkcreek, Simonton	12" - 16"	Widely scattered; normally very productive when seeded.
Agricultural Land Zone - 14,516 acres (Private Land)			
- This zone includes all defined ecological sites in the Shoshone ES Area, but only the following are farmed; all others are used for extensive agriculture (grazing).	Ephrata, Lanktree, McCain, Paulville, Power	8" - 16" (Supplemented by extensive irrigation systems)	Located on the northern, southern, and eastern margins of the ES Area; very highly modified environment from man's agricultural activities.
- Wyoming big sagebrush - Thurber's needlegrass			
- Basin big sagebrush - Bluebunch wheatgrass			
- Alkali sagebrush - Idaho fescue			
- Silver sagebrush - Sedge			
Recent Lava Flows - Barren - 3,705 acres			
- Rock outcrop normally having only scattered small adapted plants		Does not apply	Does not apply
ALL VEGETATION ZONES - 574,148 acres		8" - 20"	

The existing dominant vegetation type within the zone is an overstory of low sagebrush and an understory of perennial grasses and forbs, including Sandberg's bluegrass, Nevada bluegrass, bottlebrush squirreltail, onespike danthonia, longleaf and Hood's phlox, matted eriogonum, and erigeron.

Wyoming big sagebrush occurs on the mounds (Lithgow and Power soil series) of patterned ground (mound-intermound complex) at the lower elevations of this zone. Basin big sagebrush occurs in the major drainages and on deep well-drained soils (Elkcreek series) throughout the zone.

Mountain Big Sagebrush Zone

This zone is associated with relatively shallow to deep soils at the upper elevations (above 5,000 feet) of the ES Area.

The ecological condition within the zone ranges from poor along the bottoms of drainages to good in areas of limited water and steep slopes. The condition is a direct reflection of past patterns of livestock grazing.

The existing dominant vegetation type within the zone is an overstory of mountain big sagebrush and an understory of perennial grasses and forbs with scattered interspersed aspen groves and mountain shrubs. The understory vegetation includes Idaho fescue, western wheatgrass, western needlegrass, several species of bluegrass, basin wildrye, bottlebrush squirreltail, arrowleaf balsamroot, lupines, penstemones, asters, and eriogonums. The interspersed shrubs include bitterbrush, serviceberry, chokecherry, mock orange and dense patches of snowbrush.

Within the zone there are inclusions of basin big sagebrush on well-drained areas with gentle slopes (Elkcreek and Simonton soil series) and low sagebrush and alkali sagebrush on stony areas (Gaib, Manard, and Polecreek soil series). Semiwet meadows (Houk soil series) and wet meadows (unnamed soils) occur along valley bottoms.

Alkali Sagebrush Zone

This zone is confined to the northern portion of the ES Area known locally as Macon Flat. The soils (Manard and Polecreek series) of that area have a restrictive layer which causes a high water table in the spring.

The ecological condition within this zone ranges from poor to fair, depending primarily on the grazing history. Wildfire is not a major factor in influencing ecological condition in this zone as the vegetation is less continuous and has less total production than in some other zones. Production averages 431 pounds per acre of yearly plant growth including all grasses, forbs and shrubs.

The existing dominant vegetation type is an overstory of alkali sagebrush with an understory of perennial grasses, and both annual and perennial forbs. Understory species include bluebunch wheatgrass, western needlegrass, Idaho fescue, several species of bluegrass, bottlebrush squirreltail, thread leaf sedge, prairie junegrass, cheatgrass, Hood's and longleaf phlox, pussytoes, desert parsley, mountain agoseris, tapertip onion, Douglas knotweed, and others in lesser amounts.

Within the zone are inclusions of other vegetation types. Basin big sagebrush and bitterbrush vegetation types occur on deep, well-drained, loamy soils on mounds and sandy soils on ancient beachlines (Simonton series). Fuzzy sagebrush is associated with minor drainages. Silver sagebrush, semiwet meadows (Houk soil series), and wet meadows (unnamed soils) occur sparingly in depressions and drainages.

Three-Tip Sagebrush Zone

This zone occurs in the east-central portion of the ES Area north of the city of Shoshone, Idaho. The elevation ranges from 4,000 to 5,400 feet.

The ecological condition within the zone ranges from poor to fair. The poor condition vegetation within this zone is a result of the past history of grazing and wildfire. Three-tip sagebrush sprouts from the base after fire as do the rabbitbrushes, and both of these plants have increased as a result of repeated fires which have occurred in this zone. Three-tip sagebrush grows well on clayey soils with a restrictive layer that produces a high water table in the spring (Bostrum and Rehfield series). The combination of fire and slowly permeable soil has produced a very dense growth of three-tip sagebrush over much of this zone.

The dominant existing vegetation type in the zone consists of an overstory of three-tip sagebrush with abundant gray and green rabbitbrush and an understory of annual and perennial grasses and forbs. Understory plants include Thurber's needlegrass, bluebunch wheatgrass, bottlebrush squirreltail, streambank wheatgrass, milkvetch, longleaf phlox, lupines, cheatgrass, and others in less amounts.

Additional vegetation types occur as inclusions within this zone. Wyoming big sagebrush occurs on well-drained soils (Paulville and Power series) at lower elevations (4,000 to 4,500 feet). Basin big sagebrush occurs on deep well-drained soil (Deerhorn series) in lower elevation drainages and in localized pockets at higher elevations. Low sagebrush occurs in shallow stony areas within the zone (Bostrum, Karcal, and Yutrue soil series).

Lava Flow Complex Zone

This zone occurs in the eastern portion of the ES Area in an area characterized by relatively recent lava flows. Elevation ranges from 4,000 to 5,000 feet.

The ecological condition within the zone ranges from poor to fair. The history of grazing use, and more specifically, the ease of accessibility to domestic livestock have been important determining factors of condition. Areas easily accessible are in a lower condition class than those which are more rough and rocky. Despite being in a better condition class the vegetation in rough rocky areas produces only about 400 pounds per acre each year.

There are three dominant vegetation types within this zone, thus the name complex. Wyoming big sagebrush is found on the top of lava flows on an unnamed shallow loamy soil and along old river channels in McCain and Paulville soils. Basin big sagebrush is found in fissures and cracks where an unnamed loamy soil and unnamed mixed alluvium supports good plant growth, and in Deerhorn soil. Three-tip sagebrush, found in depressions (Rehfield soil series) and along the edges of lava flows (Bostrum soil series), occurs widely at the upper elevation of the zone (4,400 to 5,000 feet) where it grows in the Rehfield soil.

The principal understory species include Thurber's needlegrass, bottlebrush squirreltail, bluebunch wheatgrass, several species of bluegrasses, basin wildrye, desert parsley, shrubby aster, cheatgrass, and others in lesser amounts.

Major Drainages/Riparian Vegetation Zone

This broad zone includes all terrestrial vegetation that is adjacent to lakes, reservoirs, canals, streams, ponds, and springs in the ES Area. This vegetation occurs on unnamed, poorly-drained mineral and/or organic soils. In the ES Area the majority of riparian zones occur in the bottom of canyons containing perennial or intermittent streams. Six major reservoirs constitute the next largest occurrence.

All riparian zones in the ES Area have the following common characteristics: (1) they create well-defined habitat zones within the drier surrounding areas; (2) they make up a minor proportion of the overall ES Area; (3) they are generally more productive per acre of biomass, plant and animal, than the surrounding semiarid lands; and (4) they are a critical source of diversity.

Riparian zones are important for several resources. They provide grazing for livestock and big game and escape and nesting cover for a variety of birds and small animals. The lack of riparian vegetation can be a limiting factor for fish. Where riparian zones are accessible to people there may be heavy recreation use.

The diversity of vegetation in riparian zones is dependent on the specific kind of water source with which it is associated. Thus, fast flowing streams have a different kind of vegetation than stagnant seeps.

The predominant vegetation within the Major Drainages/Riparian Vegetation Zone includes willows, Douglas hawthorn, cottonwood, quaking aspen, sedges, rushes, grasses and many species of forbs, mosses, and algae. Interpretation of data on stream cover and streambank stability from the Aquatic Habitat Survey (Rabe, et al. 1976) indicates that about 70 percent of the riparian zones are in poor to fair condition. Most riparian zones accessible to livestock are in poor condition. Those places not accessible to livestock, such as fenced areas and steep canyon bottoms, are in good to excellent condition.

Productive Seeding Zone

A productive seeding is defined as one producing 15 percent or more of the seeded species (usually crested wheatgrass) annually by weight. There may be many other kinds of plants present such as sagebrush, rabbitbrush, cheatgrass, native bunchgrass, and annual weeds as well as the seeded species. Or, the seeded species may make up almost the entire yearly production. Both situations would be classed as a productive seeding.

A number of ecological sites have been seeded with varying degrees of success. Table 2-9 shows what these sites are and the general response when seeded.

Condition classes were not assigned to productive seedings as they were to native vegetation. See "Vegetation Condition" in this section for more detail.

Agricultural Land Zone

Except on the western edge, agricultural land virtually surrounds the ES Area. The Camas Prairie, Wood River Valley, and the Silver Creek drainage are important areas for grass and alfalfa hay, small grains, and livestock production. The Carey, Richfield, and Shoshone areas produce hay, small grains, livestock, and dairy products. The Gooding and Bliss areas produce corn, potatoes, small grains, beans, hay, and livestock. Base properties for grazing privileges within the Shoshone ES allotments are situated to the north, east, and primarily in and adjacent to the southern portion of the ES Area (see "Agriculture, Crop Production" in this chapter).

Recent Lava Flows and Barren Zone

Barren areas or rock outcrops are scattered throughout the ES Area and comprise approximately six-tenths of 1 percent of the total land surface. Rock outcrops include such geologic features as rhyolite monoliths, deeply incised drainages and canyons, steep escarpments from successive prehistoric lava flows, lava blisters, pressure ridges, and relatively recent lava flows. Most of these areas of rock outcrop are too small to delineate, although one such area has been delineated on Map 2-5. This is a very recent lava flow located a few miles north of Shoshone, Idaho, and is totally rough lava rock outcrop.

Surface rock associated with stony soils is not included in the estimate of rock outcrop.

Unique Vegetation Area

One unique vegetation area has been identified in the ES Area. The area, located in section 34, T. 2 S., R. 14 E., Boise Meridian, Idaho, is an isolated 20-acre stand of Rocky Mountain Douglas fir. The stand, known locally as Fir Grove, is unique in that the nearest similar vegetation lies beyond the Camas Prairie, 20 miles to the north. The grove appears to be neither increasing nor decreasing in size.

Vegetation Production

As used here the term vegetation production means the yearly growth of vegetation including all grasses, forbs, and shrubs. Production is thus an expression of the productive capability of the most basic resource, the soil.

Vegetation production is not a static process. It is dynamic, varying annually with temperature and precipitation. There is also natural variation depending upon such things as soil depth, stoniness, parent material, slope, aspect, and other factors. Production is best expressed as a range of values rather than a single value. One major problem encountered with using a range of values is "overlap". For example, if ecological site A ranges in production from 400 to 800 pounds and ecological site B ranges in production from 600 to 1,000 pounds there is an overlap of 200 pounds (600 to 800). It is, therefore, sometimes easier and more distinctive to use the average value. Ecological site A above would have an average productivity of about 600 pounds per acre per year and ecological site B would have an average productivity of about 800 pounds per acre per year. Detailed data showing the range of variation in production for the sites found in the Shoshone ES Area, as well as data from field sampling, are shown in Table A3-1 in Appendix 3.

Production by broad vegetation zone is shown in Table 2-10. The ranges in production represent the expected range of the composite of ecological sites making up the zone determined from BLM/SCS Ecological Site Guides. The average production represents the average of field samples taken in 1976 on ecological sites within the zone.

The Low Sagebrush, Alkali Sagebrush, and Lava Flow Complex Zones are naturally low producing. Plant growth is limited because of rock outcrop, shallow stony soils, and surface rock. Fine-textured soils shrink and swell sometimes causing small plants to nearly heave out of the ground and the roots of larger plants to break.

TABLE 2-10

VEGETATION PRODUCTION OF MAJOR VEGETATION ZONES

Major Vegetation Zone	Pounds of Herbage Production Per Acre 1/	
	Range	Average
Wyoming Big Sagebrush	500 - 900	641
Low Sagebrush	300 - 700	431
Mountain Big Sagebrush	800 - 1,400	991
Alkali Sagebrush	400 - 800	533
Three-tip Sagebrush	700 - 1,400	1,034
Lava Flow Complex	400 - 800	507
Major Drainages/Riparian	1,500 - 5,000	3,000
Productive Seeding	400 - 800 2/	494 3/

1/ Includes the yearly growth in air-dried weight of all grasses, forbs, and shrubs.

2/ Seedings normally produce less total herbage than native vegetation because a mixture of growth forms (grasses, forbs, and shrubs) makes use of available soil moisture throughout the soil, parent material, and fractured bedrock. Grass roots do not penetrate as deeply as shrub roots.

3/ Current productivity of seedings is on the low end of the production range because livestock concentrate on seedings with current stocking rates and management.

The Wyoming big Sagebrush, Mountain Big Sagebrush, and Three-tip Sagebrush Zones are intermediate in production. The Wyoming Big Sagebrush Zone lies mostly in the 8-12 inch effective moisture belt and is more limited in production than the other two, which occur at higher elevations in the 12-16 inch effective moisture belt.

The Major Drainages Riparian Zone is the highest in productivity. Water is not limiting for plant growth. When undisturbed by outside forces such as heavy grazing or wildlife, vegetation grows profusely, often producing several tons per acre.

The Productive Seeding Zone is a man-caused situation in which deteriorated native vegetation has been converted to introduced grass species. While less productive of total vegetation than most other vegetation zones, a higher percentage of the vegetation produced is normally palatable (less brush) and is, therefore, allocable as forage for livestock and wildlife.

Production by proposed allotment is shown in Table 2-11. Of the total estimated yearly vegetation production of 402,927,200 pounds (average), approximately 12.6 percent is presently being consumed by livestock and big game (five-year average licensed use plus total wildlife forage requirement from Table 1-5 is 63,378 AUMs; when multiplied by the monthly forage requirement of 800 pounds per AUM, this yields an average total yearly consumption of 50,702,400 pounds). The inventoried grazing capacity of 53,900 AUMs represents 10.7 percent of total production, while the proposed initial stocking rate of 38,138 AUMs represents 7.6 percent of total production.

To gain a perspective on what changes have occurred in range condition and forage production over time, the productivity of pristine potential natural vegetation was determined on relict areas in excellent condition. It was assumed that such areas are representative of prevailing conditions prior to the introduction of domestic livestock. It was further assumed that there had been no loss in soil productivity (although some loss has undoubtedly occurred through erosion). Using the same forage allocation procedures described for the Proposed Action, it was calculated that 25.3 percent of all production on the relict areas (thus, the pristine potential natural vegetation) was available for grazing. Presently the inventoried grazing capacity is 10.7 percent of total production. The difference is percentages of allocable forage reflects basic differences in plant community structure.

Unpalatable native shrubs have increased and palatable native perennial forbs and grasses have decreased to varying degrees on approximately 87 percent of public lands in the ES Area. On the remaining 13 percent, recurring fire has caused an almost total replacement of native vegetation with exotic annuals (not native to this country) including cheatgrass and mustard. About 40 percent of the lands nearly devoid of native vegetation have been seeded to crested wheatgrass and are now classed as productive seedings. These comprise approximately 6 percent of the public land in the ES Area.

Potential vegetation allocable as forage to all classes of herbivores is listed in Table 2-11. The methodology used for determining potential livestock forage production is presented in Appendix 3, Vegetation.

Vegetation Condition

As used here the term vegetation condition is synonymous with ecological condition. It is the current productivity of the vegetation relative to the vegetation's natural productive capability.

Described another way, ecological condition is the present state of an ecological site in relation to the natural potential (climax) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant

TABLE 2-11

VEGETATION PRODUCTION ON PUBLIC LAND'
IN THE SHOSHONE ES AREA

ALLOTMENT NAME	TOTAL PUBLIC LAND	EXISTING TOTAL PRODUCTION OF ALL VEGETATION (ROUNDED TO NEAREST 100 POUNDS 1/	EXISTING VEGETATION ALLOCABLE AS FORAGE TO ALL CLASSES OF HERBIVORES 2/				EXISTING VEGETATION AVAILABLE TO LIVESTOCK UNDER PROPOSED INITIAL STOCKING 3/			POTENTIAL VEGETATION ALLOCABLE AS FORAGE TO ALL CLASSES OF HERBIVORES 4/		
	ACRES		POUNDS	AUMS 5/	ACRES PER AUM'	PERCENT OF PRODUCTION	POUNDS	AUMS 5/	PERCENT OF TOTAL PRODUCTION	POUNDS	AUMS 5/	ACRES PER AUM
Black Butte	49	31,400	3,200	4	12.3	10.2	3,200	4	10.2	8,000	10	4.9
Black Canyon	50,555	35,491,100	2,689,600	3,362	15.0	7.6	1,826,400	2,283	5.1	8,425,600	10,532	4.8
Canal	511	327,600	37,600	47	10.8	11.5	37,600	47	11.5	102,400	128	4.0
Clover Creek	42,435	25,333,100	2,306,400	2,883	14.7	9.1	1,624,800	2,031	6.4	6,528,000	8,160	5.2
Compound	457	292,900	48,000	60	7.6	16.4	48,000	60	16.4	76,000	95	4.8
Cove Creek	54	34,600	3,200	4	13.5	9.2	3,200	4	9.2	12,000	15	3.6
Davis Mountain	39,030	30,571,900	3,484,800	4,356	8.9	11.4	3,250,400	4,063	10.6	8,005,600	10,007	3.9
Dempsey	20,014	14,400,900	1,196,800	1,496	13.3	8.3	892,800	1,116	6.2	2,910,400	3,638	5.5
Fricke	87	107,900	5,600	7	12.4	5.2	5,600	7	5.2	20,000	25	3.5
Gwin Ranch	487	550,300	59,200	74	6.4	10.8	49,600	62	9.0	64,000	80	6.1
Hash Spring	5,746	5,646,200	970,400	1,213	4.7	17.2	320,000	400	6.1	1,482,400	1,853	3.1
Hill City Branch	687	440,400	45,600	57	12.1	10.4	45,600	57	10.4	114,400	143	4.8
Indian	35,348	25,343,200	2,239,200	2,799	12.6	8.8	1,911,200	2,389	7.5	6,426,400	8,033	4.4
Kime	600	384,600	36,800	46	13.0	9.6	36,800	46	9.6	102,400	128	4.7
King Hill	25,368	20,516,500	1,520,000	1,900	13.4	7.4	903,200	1,129	4.4	3,902,400	4,878	5.2
Kinzie Butte	8,684	6,429,300	727,200	909	9.6	11.3	576,000	720	8.9	2,104,800	2,631	3.3
Lava	28,000	15,693,000	801,600	1,002	27.9	5.1	540,000	675	3.4	1,777,600	2,222	12.6
Lower Magic	263	138,900	41,600	52	5.1	30.0	41,600	52	30.0	48,800	61	4.3
Macon Flat	38,982	28,567,700	2,819,200	3,524	11.1	10.0	2,004,800	2,506	7.0	6,364,000	7,955	4.9
Magic	6,052	4,202,700	696,000	870	7.0	16.6	640,000	800	15.2	1,210,400	1,513	4.0
North Gooding	41,405	30,760,700	4,636,000	5,795	7.1	15.1	3,000,000	3,750	9.9	6,760,000	8,450	4.9
North Shoshone	93,628	75,174,900	9,532,800	11,916	7.9	12.7	5,863,200	7,329	7.8	18,725,600	23,407	4.0
North Slope	661	655,000	75,200	94	7.0	11.5	75,200	94	11.5	196,000	245	2.7
Picabo Cattle	7,870	6,162,900	544,800	681	11.6	8.8	336,000	420	5.5	2,421,600	3,027	2.6
Pioneer	6,762	4,094,200	550,400	688	9.8	13.4	388,000	485	9.5	1,461,600	1,827	3.7
Poison Creek	269	266,600	33,600	42	6.4	12.6	33,600	42	12.6	102,400	128	2.1
Rattlesnake	20,281	13,064,600	1,064,800	1,331	15.2	8.2	599,200	749	4.6	3,004,000	3,755	5.4
Richfield Cattle	22,015	12,624,000	2,482,400	3,103	7.1	19.7	1,876,800	2,346	14.9	4,634,400	5,793	3.8
Schooler Creek	58	57,500	24,000	30	1.9	41.8	16,000	20	27.8	31,200	39	1.5
Spud Patch	3,894	3,858,900	260,000	325	12.0	6.7	244,000	305	6.3	1,153,600	1,442	2.7
Spring Creek	563	727,400	76,800	96	5.9	10.6	72,000	90	9.9	150,400	188	3.0
Springdale	310	352,000	31,200	39	7.9	8.9	31,200	39	8.9	41,600	52	6.0
Struthers	2,392	2,087,700	136,800	171	14.0	6.6	132,800	166	6.4	277,600	347	6.9
Swinging Bridge	2,939	3,048,100	318,400	398	7.4	10.4	148,000	185	4.9	904,000	1,130	2.6
The Pasture	918	588,400	57,600	72	12.8	9.8	57,600	72	9.8	204,000	255	3.6
Ticeska	3,891	2,427,100	398,400	498	7.8	16.4	255,200	319	10.5	864,000	1,080	3.6
Tikura	3,643	1,847,000	188,000	235	15.5	10.2	163,200	204	8.8	808,800	1,011	3.6
Timmerman East	28,952	15,413,000	1,480,000	1,850	15.6	9.6	1,108,800	1,386	7.2	6,260,000	7,825	3.7
Timmerman West	14,450	11,328,500	1,031,200	1,289	11.2	9.1	952,800	1,191	8.4	3,124,000	3,905	3.7
Track	1,974	1,265,300	210,400	263	7.5	16.6	140,800	176	11.1	367,200	459	4.3
"46"	208	133,300	11,200	14	14.9	8.4	11,200	14	8.4	34,400	43	4.8
"101"	4,138	2,485,900	244,000	305	13.6	9.8	244,000	305	9.8	769,600	962	4.3
TOTAL FOR ALL ALLOMENTS	564,630	402,927,200	43,120,000	53,900	10.5	10.7	30,510,400	38,138	7.6	101,981,600	127,477	4.4

1/ Total production is the entire estimated annual growth of grasses, forbs, and shrubs. It is an expression of the productive capability of the soil. It does not reflect a proper stocking rate for livestock and/or wildlife. It was calculated from field samples in which the yearly growth of each plant species was estimated, harvested, recorded, air dried, weighed, and re-recorded after adjusting the field estimates to the dried weight.

2/ Vegetation allocable as forage is the inventoried grazing capacity, which includes 60 percent of palatable perennial plants and 20 percent of palatable annual plants on areas suitable for grazing.

3/ Vegetation available to livestock is the vegetation allocable as forage with deductions made for competitive big game forage and for vegetation not grazed by livestock in pastures receiving a rest treatment under a proposed grazing system.

4/ Potential vegetation allocable as forage represents 60 percent of palatable perennial plants and 20 percent of palatable annual plants found in the pristine plant communities which occurred over the entire ES Area prior to the late 1800s.

The estimates were based upon relict areas (protected from grazing, except by wildlife) in excellent condition which were field sampled for yearly production. The relict areas either lie within the ES Area or within the Southern Idaho region with very similar soils, elevations, and climates.

5/ Animal unit months (AUMs) were determined by dividing pounds of forage by 800 pounds, the monthly forage requirement.

community for the site. Basically, ecological condition is a rating of the plant community. Air-dry weight is the unit of measure used to compare the vegetation composition and production of the present plant community with that of the climax community.

Four basic categories, good, fair, poor, and highly disturbed (very poor), are used to describe ecological condition in the ES Area. Normally, the excellent category is used, but since no lands in the ES Area are classed as excellent, it has been dropped. The good category has 51 to 75 percent of the plant composition and production found in the potential natural plant community. The fair class has 26 to 50 percent while the poor class has less than 25 percent. The highly disturbed condition class, often called very poor, describes an existing vegetation which is at a very low stage of secondary succession. It represents an extreme departure from the potential natural plant community and results from one or more disturbing effects such as prolonged livestock overuse, repeated burning by wildfire, unsuccessful range rehabilitation projects. The highly disturbed category includes weed patches, solid stands of cheatgrass, and other places where even native indicator shrubs are missing.

Two other categories, seeding and brush control, describe situations wherein man has so altered the native vegetation that condition classes were not applied. Seedings have at least 15 percent of the total dry matter production made up of the seeded species. Brush control areas have less shrub overstory than is characteristic of the potential natural plant community, while native understory species remain rather than being replaced by exotic seeded species such as crested wheatgrass.

Table 2-12 summarizes the vegetation condition for all public land in both the proposed allotments and the unallotted areas.

TABLE 2-12

SUMMARY OF EXISTING VEGETATION CONDITION
FOR ALL PUBLIC LAND WITHIN THE ES AREA

Vegetation Condition Category	Proposed Allotments		Proposed Unallotted Areas		Proposed Allotments And Unallotted Areas	
	Acres	Percent of Total Acres	Acres	Percent of Total Acres	Acres	Percent of Total Acres
Seeding	36,878	6.4	---	0	36,878	6.4
Brush Control	30,476	5.3	---	0	30,476	5.3
Highly Disturbed	38,379	6.7	655	0.1	39,034	6.8
Poor	234,931	40.9	4,509	0.8	239,440	41.7
Fair	186,157	32.5	3,637	0.6	189,794	33.1
Good	37,809	6.6	717	0.1	38,526	6.7
All Categories	564,630	98.4	9,518	1.6	574,148	100.0

Table 2-13 shows the acres in each of the broad vegetation zones (except agricultural land) by condition class for each proposed allotment.

Table 2-14 shows the acres in each vegetation zone by condition class for each proposed unallotted area.

Map 2-6 shows the existing vegetation condition for all public land in the ES Area.

Vegetation Trend

The trend of vegetation condition refers to a movement toward or away from potential natural vegetation (excellent condition). Trend is usually described by three categories: upward, downward, or static. Upward trend means the vegetation is improving relative to potential, downward trend means the vegetation is deteriorating, and static trend means there is neither improvement nor deterioration.

Trend was determined by field observation based on a one-time examination of the area. Thus, it is represented by observed apparent trend rather than long-term observations. Several factors were considered in determining the observed apparent trend. They were species composition, species vigor, number of seedlings, plant residues (litter), and condition of the soil surface.

The existing trend is shown by allotment in Table 2-15.

Map 2-7 shows the existing trend throughout the ES Area.

Only about 2 percent of the public land in the ES Area is moving toward the potential natural vegetation (upward trend). Twenty-two percent of the public land is in a downward trend. This means that desirable grass and forb species are becoming smaller and less vigorous with little or no reproductive success, while unpalatable shrubs show evidence of reproductive success and good vigor. A downward trend also means that plant residues may not be collecting in place to prevent water erosion on sloping land or wind erosion on level land.

Nearly 76 percent of the public land is in the static category. This means it is neither improving nor deteriorating. This situation occurs on all condition classes. For example, a weed patch (highly disturbed condition) may be very stable if heavily grazed every year and burned over periodically. Or, an area may be in good condition and maintained by moderate grazing each year at a time when the majority of the plants are dormant. Rock outcrops and recent lava flows, as well as other areas unsuited for livestock grazing such as stony areas and steep slopes, are in a static trend.

Since no area is completely devoid of vegetation, all public land acres within allotments were placed in one of the trend categories.

TABLE 2-13

ACREAGE OF EXISTING VEGETATION ZONES AND VEGETATION CONDITION BY ALLOTMENT
(Public Land Acres Only)

ALLOTMENT NAME	VEGETATION CONDITION	WYOMING BIG SAGE ARTRW	LOW SAGE ARAR8	MOUNTAIN BIG SAGE ARTRV	ALKALI SAGE ARLO	THREE-TIP SAGEBRUSH ARTR4	LAVA FLOW COMPLEX	RIPARIAN	PRODUCTIVE SEEDINGS	RECENT LAVA FLOWS BARRᵀN	TOTAL ACRES
BLACK BUTTES	High Dist. 1/	20									20
	Poor	29									29
	Total	49									49
BLACK CANYON	Seeding								3,974		3,974
	Br. Cont. 2/	1,240									1,240
	High Dist.	3,700									3,700
	Poor	11,270	16.195	2.180				1,500			31,145
	Fair		1.768	8,056							9,824
	Good		517	155							672
	Total	16,210	18,480	10,391				1,500	3,974		50,555
CANAL	Poor	112									112
	Fair	399									399
	Total	511									511
CLOVER CRÉEK	Seeding								2,597		2,597
	High Dist.	4,439									4,439
	Poor	10,988	1,831	1,465				367			14,651
	Fair	187	17,806	187				500			18,680
	Good		1.654	414							2,068
	Total	15,614	21,291	2,066				867	2,597		42,435
COMPOUND	Poor	457									457
COVE CREEK	Poor	54									54
DAVIS MOUNTAIN	Seeding								4,815		4,815
	Br. Cont.		792	264							1,056
	High Dist.	1,585									1,585
	Poor	1,275	6,468	2,239				871			10,853
	Fair		5,300	13,249				378			18,927
	Good		894	900							1,794
	Total	2,860	13,454	16,652				1,249	4,815		39,030
DEMPSEY	Seeding								3,267		3,267
	High Dist.	4,315									4,315
	Poor	2,608	2,825	285							5,718
	Fair	1,508	2,584	808				484			5,384
	Good		545	173				612			1,330
	Total	8,431	5,954	1,266				1,096	3,267		20,014
FRICKE	High Dist.	19									19
	Poor	48						20			68
	Total	67						20			87
GWIN RANCH	Fair		210	195				82			487
HASH SPRING	Poor			330							330
	Fair			1,800	80						1,880
	Good			3.511	25						3,536
	Total			5,641	105						5,746
HILL CITY BRANCH	Poor	541									541
	Fair	146									146
	Total	687									687
INDIAN	Seeding								3,446		3,446
	High Dist.	5,629	100								5,729
	Poor	5,475	3,055	1,990				300			10,820
	Fair		7,315	4,541				757			12,613
	Good		1,315	1,370				55			2,740
	Total	11,104	11,785	7,901				1,112	3,446		35,348
KIME	Poor	354									354
	Fair	246									246
	Total	600									600
KING HILL	Seeding								2,599		2,599
	Poor	9,435	5,701	3,735				786			19,657
	Fair	1,642	219	328							2,189
	Good							923			923
	Total	11,077	5,920	4,063				1,709	2,599		25,368
KINZIE BUTTE	Seeding								330		330
	Poor	4,858				898					5,756
	Fair	1,177				1,421					2,598
	Total	6,035				2,319			330		8,684
LAVA	Poor	2,431					18,617	382			21,430
	Fair						6,525	45			6,570
	Total	2,431					25,142	427			28,000
LOWER MAGIC	Seeding								202		202
	Poor	61									61
	Total	61							202		263
MACON FLAT	Poor			11,535	7,554			690			19,779
	Fair			1,246	17,503						18,749
	Good			135	319						454
	Total			12,916	25,376			690			38,982
MAGIC	Seeding								2,024		2,024
	Br. Cont.	271		1,550							1,821
	Poor	285									285
	Fair	1,698		224							1,922
	Total	2,254		1,774					2,024		6,052

TABLE 2-13

ACREAGE OF EXISTING VEGETATION ZONES AND VEGETATION CONDITION BY ALLOTMENT
(Public Land Acres Only)

ALLOTMENT NAME	VEGETATION CONDITION	WYOMING BIG SAGE ARTRW	LOW SAGE ARAR8	MOUNTAIN BIG SAGE ARTRV	ALKALI SAGE ARLO	THREE-TIP SAGEBRUSH ARTR4	LAVA FLOW COMPLEX	RIPARIAN	PRODUCTIVE SEEDINGS	RECENT LAVA FLOWS BARREN	TOTAL ACRES
NORTH GOODING	Seeding								2,420		2,420
	Br. Cont.			2,720							2,720
	Poor	8,920	594	2,379				489			12,382
	Fair	1,856	8,155	6,572				37			16,620
	Good		2,905	4,340				18			7,263
	Total	10,776	11,654	16,011				544	2,420		41,405
NORTH SHOSHONE	Seeding								6,637		6,637
	Br. Cont.		780	14,983	800						16,563
	High Dist.	6,193									6,193
	Poor	17,035	2,444	11,358	2,397	3,128		1,453		3,705	41,520
	Fair	1,246	3,726	8,759	554	5,897					20,182
	Good	127	255	1.015		1,136					2,533
	Total	24,601	7,205	36,115	3,751	10,161		1,453	6,637	3,705	93,628
NORTH SLOPE	Poor			32							32
	Fair			233							233
	Good			396							396
	Total			661							661
PICABO CATTLE	Seeding								861		861
	Poor	3,046		1,903			294				5,243
	Fair			1,766							1,766
	Total	3,046		3,669			294		861		7,870
PIONEER	Seeding								1,634		1,634
	High Dist.	1,151									1,151
	Poor	3,977									3,977
	Total	5,128							1,634		6,762
POISON CREEK	Poor			269							269
RATTLESNAKE	Seeding								465		465
	High Dist	6,825									6,825
	Poor	4,000	727					249			4,976
	Fair	1,132	4,108					249			5,489
	Good	380	1,611	535							2,526
	Total	12,337	6,446	535				498	465		20,281
RICHFIELD CATTLE	Br. Cont.	4,658									4,658
	Poor						1,780				1,780
	Fair	6,256					9,321				15,577
	Total	10,914					11,101				22,015
SCHOOLER CREEK	Fair			49							49
	Good			9							9
	Total			58							58
SPUD PATCH	Poor			3,108							3,108
	Fair			786							786
	Total			3,894							3,894
SPRING CREEK	Fair			488				75			563
SPRINGDALE	Seeding								18		18
	Fair				223			69			292
	Total				223			69	18		310
STRUTHERS	Poor	1,752			280	160		200			2,392
SWINGING BRIDGE	Poor			320							320
	Good			2,559				60			2,619
	Total			2,879				60			2,939
THE PASTURE	High Dist.	760									760
	Poor	158									158
	Total	918									918
TICESKA	Seeding								456		456
	High Dist.	3,112									3,112
	Poor	323									323
	Total	3,435							456		3,891
TIKURA	Poor						3,643				3,643
TIMMERMAN EAST	Poor	2,189					6,771				8,960
	Fair	3,291					16,701				19,992
	Total	5,480					23,472				28,952
TIMMERMAN WEST	Br. Cont.	1,280									1,280
	Poor	959		107							1,066
	Fair	2,052		1,106							3,158
	Good	4,256		4,690							8,946
	Total	8,547		5,903							14,450
TRACK	Br. Cont.	1,138									1,138
	Fair	836									836
	Total	1,974									1,974
"46"	High Dist.	171									171
	Poor	37									37
	Total	208									208
"101"	Seeding								1,133		1,133
	High Dist	360									360
	Poor	2,645									2,645
	Total	3,005							1,133		4,138
TOTAL OF VEGETATION CONDITION FOR EACH VEGETATION ZONE	Seeding	---	---	---	---	---	---	---	36,878	---	36,878
	Br. Cont.	8,587	1,572	19,517	800	---	---	---	---	---	30,476
	High Dist.	38,279	100	---	---	---	---	---	---	---	38,379
	Poor	95,322	39,840	43,235	10,231	4,186	31,105	7,307	---	3,705	234,931
	Fair	23,672	51,191	50,393	18,360	7,318	32,547	2,676	---	---	186,157
	Good	4,763	9,696	20,202	344	1,136	---	1,668	---	---	37,809
TOTAL ACRES IN EACH ZONE		170,623	102,399	133,347	29,735	12,640	63,652	11,651	36,878	3,705	564,630

1/ Highly Disturbed: This classification depicts an area that supports vegetation at a very low stage of secondary succession. It represents extreme departure from the natural potential of a particular area.

2/ Brush Control: has been abrievated Br. Cont.

TABLE 2-14

EXISTING VEGETATION ZONES AND VEGETATION CONDITION BY PROPOSED UNALLOTTED AREAS (MAP REFERENCE NUMBERS)

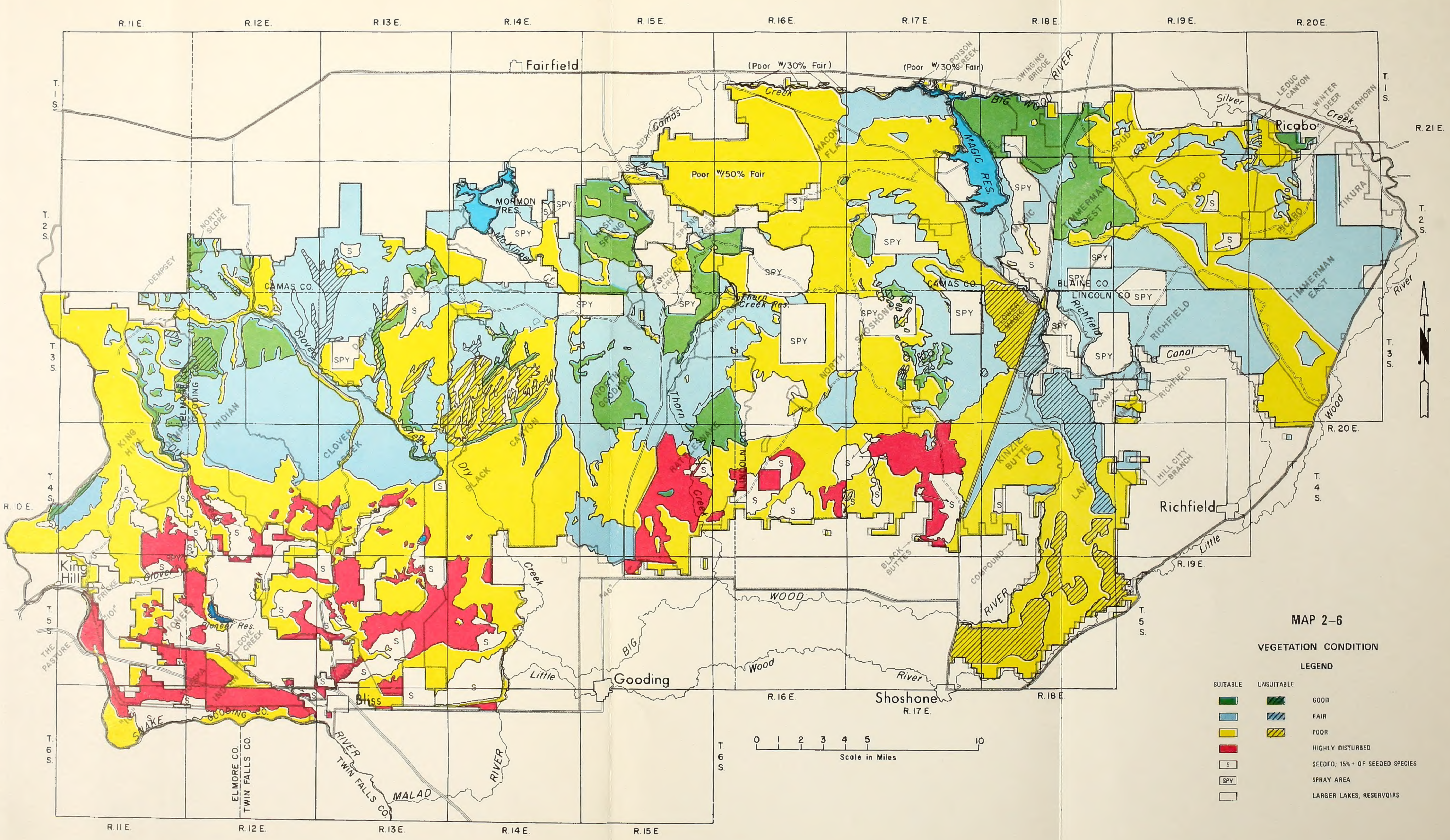
(PUBLIC LAND ACRES ONLY)

Condition Class		Wyoming Big Sage ARTRW	Low Sage ARAR8	Mountain Big Sage ARTRV	Alkali Sage ARLO	Three Tip Sage ARTR4	Lava Flow Complex	Riparian	Productive Seedings	Recent Lava Flows Barren	Total Acres All Vegetation Zones
HIGHLY DISTURBED	Map Ref. No.	26, 28, 29, 37, 39, 41, 42	None	None	None	None	None	None	None	None	
	Acres	655	0	0	0	0	0	0	0	0	655
POOR	Map Ref. No.	21, 22, 23, 24, 25 27, 30, 31, 32, 35, 36, 38, 40, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 61, 62, 64, 65	None	1, 2, 4, 5, 6, 13, 14, 15, 58, 59, 60	17, 18, 61, 63, 68, 70	None	None	33, 34, 69	None	None	
	Acres	1,792	0	2,359	309	0	0	49	0	0	4,509
FAIR	Map Ref. No.	66, 67	None	7, 8, 9, 10, 11, 12, 58, 59, 60	63, 68	None	62	66, 67	None	67	
	Acres	327	0	2,537	129	0	60	104	0	480	3,637
GOOD	Map Ref. No.	None	None	3, 16, 19, 58, 59	16, 20	None	None	None	None	None	
	Acres	0	0	627	90	0	0	0	0	0	717
TOTAL, ALL CONDITION CLASSES		2,774	0	5,523	528	0	60	153	0	480	9,518

TABLE 2-15

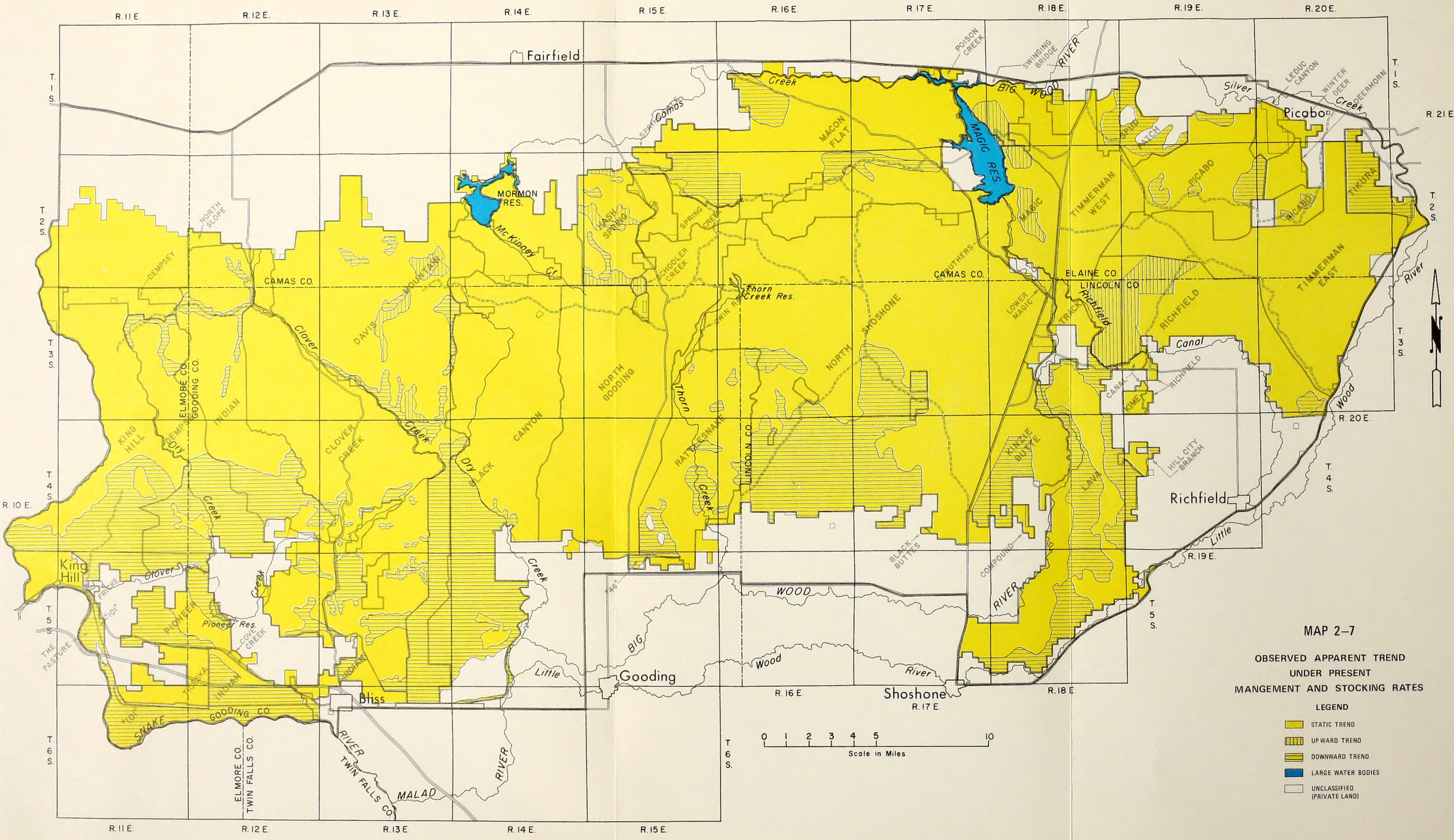
EXISTING VEGETATION TREND BY
PROPOSED ALLOTMENT

Allotment Name	EXISTING VEGETATION TREND						
	Upward		Downward		Static		All Categories
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Total Acres - 100%
Black Buttes			26	53.1	23	46.9	49
Black Canyon			13,212	26.1	37,343	73.9	50,555
Canal					511	100	511
Clover Creek			4,439	10.5	37,996	89.5	42,435
Compound					457	100	457
Cove Creek					54	100	54
Davis Mountain	1,246	3.2	8,840	22.6	28,944	74.2	39,030
Dempsey			11,154	55.7	8,860	44.3	20,014
Fricke					87	100	87
Gwin Ranch					487	100	487
Hash Spring	1,115	19.4	315	5.5	4,316	75.1	5,746
Hill City Branch			120	17.5	567	82.5	687
Indian			9,429	26.7	25,919	73.3	35,348
Kime					600	100	600
King Hill			6,294	24.8	19,074	75.2	25,368
Kinzie Butte			3,821	44.1	4,863	55.9	8,684
Lava			8,501	30.4	19,499	69.6	28,000
Lower Magic					263	100	263
Macon Flat			9,222	23.7	29,760	76.3	38,982
Magic	1,387	22.9			4,665	77.1	6,052
North Gooding					41,405	100	41,405
North Shoshone			25,036	26.7	68,592	73.3	93,628
North Slope					661	100	661
Picabo Cattle			2,642	33.6	5,228	66.4	7,870
Pioneer			4,607	68.1	2,155	31.9	6,762
Poison Creek					269	100	269
Rattlesnake			4,897	24.1	15,384	75.9	20,281
Richfield Cattle	6,524	29.6	800	3.7	14,691	66.7	22,015
Schooler Creek	58	100					58
Soud Patch			1,920	49.3	1,974	50.7	3,894
Spring Creek					563	100	563
Springdale					310	100	310
Struthers					2,392	100	2,392
Swinging Bridge	1,320	44.9	320	10.9	1,299	44.2	2,939
The Pasture			903	98.4	15	1.6	918
Ticeska					3,891	100	3,891
Tikura			3,643	100			3,643
Timmerman East					28,952	100	28,952
Timmerman West					14,450	100	14,450
Track					1,974	100	1,974
"46"			171	82.2	37	17.8	208
"101"			4,138	100			4,138
Total of All Allotments	11,650	2.1	124,450	22.0	428,530	75.9	564,630



MAP 2–6

VEGETATION CONDITION



MAP 2–7

OBSERVED APPARENT TREND UNDER PRESENT MANGEMENT AND STOCKING RATES

Endangered and Threatened Plants

The Endangered Species Act of 1973 directs that certain species of plants and their habitats be protected. Two categories were established by the Act: endangered and threatened (ET). Endangered refers to a species considered likely to become extinct in its total Idaho range during the next ten years if present trends continue. Threatened refers to a species whose population is likely to become endangered in the next ten years if present trends continue (Eidemiller 1976). A list of "proposed" ET flora was developed by the Smithsonian Institution and published in the Federal Register of June 16, 1976.

According to Eidemiller (1976) there were five species found in the ES Area which were on the proposed Smithsonian ET flora list for Idaho. Three of these were listed as endangered and two as threatened. Since Eidemiller's report was published, Henderson, D. M., F. D. Johnson, P. Packard, and R. Steele (1977) have recommended that Elmore milkvetch (Astragalus purshii ophiogenes), endangered, and thyme eriogonum (Eriogonum thymoides), threatened, be removed from the proposed Federal list. To date the final Federal list has not been published, but when it is these two species are not expected to be included.

Three species, then, remain of primary concern. These are: Cusick primrose (Primula cusickiana), endangered; Fairfield milkvetch (Astragalus atratus var. inseptus), endangered; and fuzzy sage (Artemisia papposa), threatened. Henderson, et al. (1977) recommend the Cusick primrose be retained as endangered, that the fuzzy sage remain threatened, and that the Fairfield milkvetch be reduced from endangered to threatened. This would be expected to occur when the final list is published.

Eidemiller, in her field inventory, found fuzzy sage in areas lying in the northern one-third of the ES Area west of Magic Reservoir. It was most often found in low swales where moisture accumulates and was associated with other low sagebrush species, particularly alkali sage (Artemesia longiloba). Substantial populations were found in the Macon Flat, Hash Springs, City of Rocks, and Thorn Creek areas.

Fairfield milkvetch was found by Eidemiller in several locations. Plants were numerous in those areas where they were found. Primary concentrations were located south of Picabo Hills, south of Magic Reservoir, in the City of Rocks, and near Thorn Creek. Smaller concentrations were found around Mormon Reservoir, adjacent to Clover Creek, and north of King Hill.

Eidemiller found only two specimens of Cusick primrose; one just west of Hill City (known site), the second in a seepage area on the north side of Picabo Hills. Other botanists have reported sightings west of Bliss and in the Macon Flat area.

Eidemiller reported that several other endangered, threatened, or uncommon species could possibly exist in the ES Area, but no field observations were made of these. Eidemiller's report is available for review at the Shoshone District Office.

Noxious Plants

Noxious weeds occur widely in the ES Area. They are especially heavy on overgrazed ranges devoid of natural vegetation, along roadsides, in borrow pits, and along livestock trails. Locally, heavy infestations occur along irrigation canal banks. The most important noxious plants are listed and discussed briefly in Table 2-16.

TABLE 2-16

PRINCIPAL NOXIOUS PLANTS FOUND ON PUBLIC LANDS IN THE SHOSHONE ES AREA

Plant Species	General Occurrence in ES Area
Burr Buttercup	Found throughout the ES Area on spots in highly disturbed condition. Most prominent on areas with a history of severe livestock overstocking and recurring fire.
Diffuse knapweed	Widely occurring, especially heavy infestations along roadways in the Macon Flat Allotment.
Medusahead wildrye	Found mainly on heavy clay soils in the King Hill area. New pockets of occurrence are being discovered indicating the species is slowly moving eastward.

Poisonous Plants

Poisonous plants have not been a serious problem in the ES Area, but occasional livestock losses have been reported. The plants are generally widely scattered and are not highly palatable. Most death losses have occurred either in severely overgrazed areas or in the spring when insufficient palatable nonpoisonous forage is available. The principal poisonous species are listed and briefly described in Table 2-17.

TABLE 2-17

POISONOUS PLANTS FOUND IN THE SHOSHONE ES AREA

Plant Species	General Occurrence in ES Area	Effects on Livestock
Death camas	Moist riparian zones, occasionally on dry areas	Eating in early spring by cattle or sheep causes nausea, convulsions, coma
Greasewood	Saline-alkaline bottoms, not common	Eating in fall by sheep when other forage is dry causes dullness, progressive weakening, coma
Halogeton	Along sheep trails, near springs and streams, where soil disturbance has occurred. Found mainly north of Bliss, Idaho in White Arrow Pond and Halogeton Spring area.	Seldom eaten in poisonous quantity when other forage is available. Causes dullness, progressive weakening, coma, violent struggle for air in both cattle and sheep.
Horsebrush	Scattered throughout, mainly concentrated north of Shoshone, Idaho	Eating in early spring by sheep causes depression, swelling of head, neck, ears, peeling of skin.
Larkspur	Scattered throughout, primarily at higher elevations. Note: This plant probably causes more livestock poisoning than all others combined.	Eating in late spring or early summer by cattle causes nervousness, nausea, bloating, respiratory paralysis.
Lupine	Widely occurring	Eating of pods and seeds in fall by sheep causes depression, loss of muscle control, convulsions, coma.
Water Hemlock	Primarily along irrigation canals between Gooding, Idaho and Bliss, Idaho; North Gooding Allotment	Eating by cattle or sheep at any time causes rapid breathing, convulsions, coma, death.

TERRESTRIAL WILDLIFE

The ES Area is endowed with a broad array of vegetation and topographic features, leading to a great diversity of wildlife species. These species include 46 mammals, 148 birds, 15 reptiles, and 7 amphibians, which inhabit the Shoshone ES Area. All 216 species are listed by common and scientific names in Appendix 4. Only those species identified as important in the applicable Unit Resources Analysis (URA) will receive individual discussion. (The URA is the component in the BLM's Planning System where inventories are analyzed.) The remaining species will either be discussed collectively, or grouped according to their habitat requirements (e.g., ground nesters, herbivorous small mammals, etc.) and discussed accordingly.

Appendix 4 lists each species, its relative abundance, the existing broad vegetation zones in which it is most likely to occur, its classification as determined by the Idaho Department of Fish and Game (IDF&G), and the season in which it occurs within the zones. The vegetation zones correspond to those described above in this chapter.

Big Game

Mule deer, elk, and antelope are the most important big game animals inhabiting the ES Area. Table 2-18 shows the estimated big game numbers and forage demand for those allotments inhabited by big game.

Mule Deer

Map 2-8 identifies the areas inhabited by mule deer. The ES Area provides both yearlong and winter habitat. The resident or yearlong inhabitant populations are low, but their trend appears upward. The winter areas are utilized by the resident deer as well as by migrants moving into the ES Area from the north.

Winter migrants normally enter the ES Area in November and depart in April. The population estimates in Table 2-18 are based on the highest winter trend counts recorded between 1972 and 1976. The counts were conducted by the IDF&G and they concur with the estimates as presented.

Four crucial winter ranges comprise the areas of primary concern. These concentration areas and their public land acreage are (west to east): King Hill (26,480 acres), Rattlesnake (12,560), Black Buttes (11,560), and Picabo (11,600). Map 2-8 shows the location of these areas relative to the proposed allotments. Federal and State lands make up practically 100 percent of the crucial areas except on the Picabo range where private land comprises approximately 45 percent of the crucial area.

TABLE 2 - 18

BIG GAME NUMBERS AND FORAGE DEMAND

	Deer					Elk					Antelope					TOTAL WILDLIFE AUMS	
	No. of Animals			Forage Demand		No. of Animals			Forage Demand		No. of Animals			Forage Demand			
ALLOTMENTS 1/	RESIDENT 2/	WINTER 3/	PASSING THROUGH 4/	TOTAL AUMS	COMPETITIVE AUMS	RESIDENT 2/	WINTER 3/	PASSING THROUGH 4/	TOTAL AUMS	COMPETITIVE AUMS	RESIDENT 2/	WINTER 3/	PASSING THROUGH 4/	TOTAL AUMS	COMPETITIVE AUMS	TOTAL	COMPETITIVE
BLACK CANYON	20	45	50	129	106											129	106
CLOVER CREEK	25	40	50	138	115											138	115
DAVIS MOUNTAIN	40	50	100	208	173 6/											208	173
DEMPSEY	20	55	50	142	116											142	116
GWIN RANCH	3			5	5			8	5	5						10	10
HASH SPRING	20		150	73	61	80			300	300						373	361
INDIAN	20	47	50	132	108											132	108
KING HILL	25	365		531	430											531	430
KINZIE BUTTE	5			9	8											9	8
LAVA	5			9	8											9	8
MACON FLAT	30		450	166	138			30	19	19						185	157
MAGIC		23	200	79	63						5			8	7	87	70
NORTH GOODING	30	20	250	210	173			60	56	56	10	22		40	34	306	263
NORTH SHOSHONE	35	468		690	558		80		155	155	10			15	13	860	726
PICABO CATTLE	11	523		689	551						10			15	13	704	564
RATTLESNAKE	25	269		411	334 7/			57	71	71	12			18	15	500	420
RICHFIELD CATTLE	15			26	23						10			15	13	41	36
SCHOOLER CREEK			4	2	2			5	8	8						10	10
SPUD PATCH	1	17		25	20											25	20
SPRING CREEK	4			7	6											7	6
STRUTHERS	3			5	5											5	5
SWINGING BRIDGE			150	19	15											19	15
TIKURA			150	38	30											38	30
TIMMERMAN EAST	10	15		50	40						5			8	7	58	47
TIMMERMAN WEST	5	38	200	113	91						5			8	7	121	98
SUB TOTAL	352	1975	1854	3906	3179											4647	3902
UNALLOTTED AREAS 5/																	
DEERHORN	4	136		182	146											182	146
LEDUCK CANYON	2	81		108	87											108	87
WINTER DEER	2	71		96	77											96	77
TOTAL	360	2263		4292	3489	80	80		614	614	67	22		127	109	5033	4212

1/ Only those allotments supporting big game populations are listed
2/ Resident spends twelve months in the ES Area
3/ Winter - Spends five months (Mid November - Mid April) in ES Area
4/ Passing Through - Those resident and/or winter animals moving to and from winter areas
5/ Proposed Unallotted Areas would have no authorized livestock grazing.
6/ Of these 173 AUMs, 100 have been assigned to areas unsuitable for livestock grazing
7/ Of these 334 AUMs, 12 have been assigned to areas unsuitable for livestock grazing

The winter ranges generally are south-facing. The resulting combination of sun and wind maintains a snow-free environment during portions of the winter months. The ranges are confined to Wyoming big sagebrush and low sagebrush types. Table 2-19 presents the number of acres of major mule deer habitat by allotment and its condition. Criteria for determining big game habitat condition are presented in Appendix 4.

TABLE 2-19

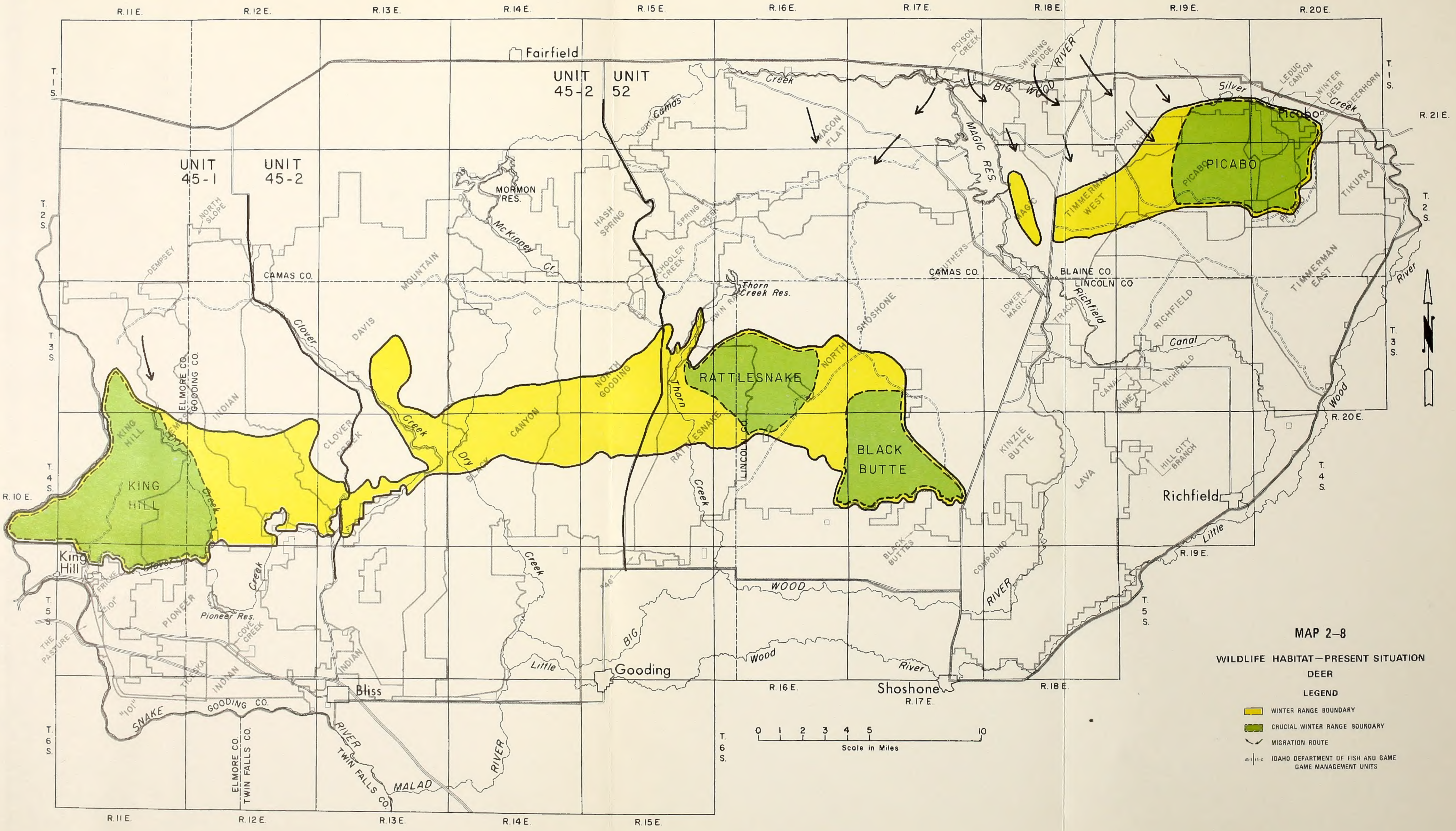
MAJOR DEER USE AREAS
CONDITION, ACREAGE, AND PERCENT OF PROPOSED ALLOTMENTS

Allotment 1/	Crucial Winter Ranges		Winter And Spring Use Areas 3/		Total Deer Use Area		Habitat Condition (Percent of Total) 4/		
	Acres	Percent 2/	Acres	Percent 2/	Acres	Percent 2/	Poor	Fair	Good
Black Canyon			9,520	17	9,520	17	60	40	0
Clover Creek			5,320	12	5,320	12	90	10	0
Davis Mountain			5,920	12	5,920	12	60	40	0
Dempsey	7,120	33	6,240	29	13,360	61	90	10	0
Gwin Ranch			722	100	722	100	0	0	100
Indian			8,800	24	8,800	24	90	10	0
King Hill	19,360	69			19,360	69	90	10	0
Magic			1,560	23	1,560	23	50	40	10
North Gooding			12,520	28	12,520	28	60	40	0
North Shoshone	18,920	19	9,200	9	28,120	28	90	10	0
Picabo 5/	11,600	77	2,640	17	14,240	94	90	10	0
Rattlesnake	5,200	25	5,520	26	10,720	51	90	10	0
Spud Patch			1,520	26	1,520	26	0	0	100
Timmerman West			5,840	13	5,840	13	90	10	0
Totals	62,200		75,322		137,522				

1/ Only the proposed allotments which support deer use are listed.
2/ Percentages are based on total public land acreage in allotments.
3/ Winter and spring use areas listed are in addition to the crucial winter ranges.
4/ The classes of habitat condition are explained in Appendix 4.
5/ Figures shown for Picabo include 3,730 acres in the Deerhorn, Leduck Canyon, and Winter Deer unallotted areas.

Although no dietary studies have been conducted in the ES Area, utilization transects indicate that Wyoming big sagebrush, low sagebrush, bitterbrush, rabbitbrush, and shrubby buckwheat are among the principal foods eaten during the winter. Perennial grasses and forbs make up a lesser portion of the diet.

These observations generally correspond to studies by Thiessen (1970) and Trout, L. E. and J. L. Thiessen (1973), which were conducted on ranges in Idaho with vegetation similar to that found in the ES Area. They found that winter deer diets are comprised of approximately 85 percent shrubs, 10 percent forbs, and 5 percent grasses.



MAP 2–8

WILDLIFE HABITAT—PRESENT SITUATION
DEER

LEGEND

- 🟨 WINTER RANGE BOUNDARY
- 🟩 CRUCIAL WINTER RANGE BOUNDARY
- ↙ MIGRATION ROUTE
- 45-1 | 45-2 IDAHO DEPARTMENT OF FISH AND GAME GAME MANAGEMENT UNITS

During late winter and early spring the deer heavily utilize the emerging grasses and forbs. These plants provide a high level of protein (Schneegar & Bumstead 1977) for animals which are in the late stages of gestation. From observations, it appears that the deer in the ES Area respond similarly to those studied by Trout, L. E. and J. L. Thiessen (1973); Thiessen (1970); Nicholson (1973); and Kufeld, R. C., O. C. Wallmo, and C. Feddema (1973). Their studies indicated that spring diets consist of 35-45 percent grasses, 15-50 percent browse, and 10-15 percent forbs.

The condition of the deer habitat presented on Table 2-19 shows that the majority of the deer winter ranges are in poor to fair condition. Perennial forbs, grasses, and desirable shrubs (bitterbrush, chokecherry, buckwheat, and service berry) are generally lacking. When present, desirable shrubs such as bitterbrush are usually severely hedged. Sagebrush is the most abundant shrub available to the deer, but in the high deer concentration areas even it exhibits a high degree of utilization.

On the four crucial winter range areas deer and livestock presently compete for forage. The degree of competition varies depending on the type of livestock and the condition of the range. There are three primary situations in which conflicts arise between deer and livestock for needed forage. These are: (1) when both compete for early spring green-up of grasses and forbs, (2) when both compete on winter ranges for desirable browse, and (3) when livestock utilize the available forage on the winter ranges prior to the arrival of the deer.

Elk

In the winter of 1965 the IDF&G released 36 elk in the ES Area with the expectation that they would move north out of the area the following spring. However, the majority of the animals remained and have since established a herd of 80 to 100 head. (Refer to Table 2-18 for elk numbers and forage demand.)

Map 2-9 depicts the location of elk habitat in the ES Area. A radio telemetry study conducted by the IDF&G has identified the seasonal use areas of the elk. The detailed results of the study are available in the Shoshone District Office. The acres of major elk use areas by allotment and the habitat condition are presented in Table 2-20. Elk use occurs predominantly within the Mountain Big Sagebrush Zone (see "Vegetation Zones" in this chapter).

No food habit studies have been conducted within the ES Area. However, a compilation of food habit studies from throughout the West (Kufeld 1973) indicates a general summer diet consisting of 55-60 percent grasses, 30-35 percent forbs and 10-15 percent shrubs. Winter diets are comprised of 25-30 percent grasses, 30-35 percent forbs, and 40-45 percent shrubs.

The habitat condition of the elk use areas varies depending upon the season of use. Fifty percent of the summer use areas are in fair to good condition, whereas only fourteen percent of the winter use areas are in fair to good condition.

TABLE 2-20

MAJOR ELK USE AREA
CONDITION, ACREAGE, AND PERCENT OF PROPOSED ALLOTMENTS

Allotment 1/	Elk Winter Range		Elk Summer Range		Elk Calving Range 3/		Total Elk Range		Habitat Condition 4/ (Percent)		
	Acres	Percent 2/	Acres	Percent 2/	Acres	Percent 2/	Acres	Percent 2/	Poor	Fair	Good
Black Canyon			11,200	20	1,000	2	11,200	20	0	40	60
Davis Mountain			12,800	26			12,800	26	40	40	20
Gwin Ranch	541	75					541	75	0	0	100
Hash Spring			8,883	100	8,883	100	8,883	100	20	50	30
Kinzie Butte	1,120	12					1,120	12	100	0	0
Macon Flat			15,720	35			15,720	35	95	5	0
North Gooding	4,160	9	5,920	13	1,520	13	10,080	23	40	50	10
North Shoshone	18,040	18	17,760	18			35,800	36	90	10	0
Rattlesnake	4,040	19					4,040	19	90	10	0
Schooler Creek			160	52	160	53	160	52	20	50	30
Totals	27,901		72,443		11,563		100,344				

1/ Only the proposed allotments which support elk use are listed
2/ Percentages under use areas are based on total public land acreage in allotments
3/ Areas tabulated as elk calving ranges also serve as summer ranges, so are included under both headings
4/ The classes of habitat condition are explained in Appendix 4.

Scattered patches of chokecherry and aspen provide areas for elk calving. Additionally, these patches, in conjunction with deep draws, rolling hills, and abundant sagebrush, provide adequate escape and resting cover.

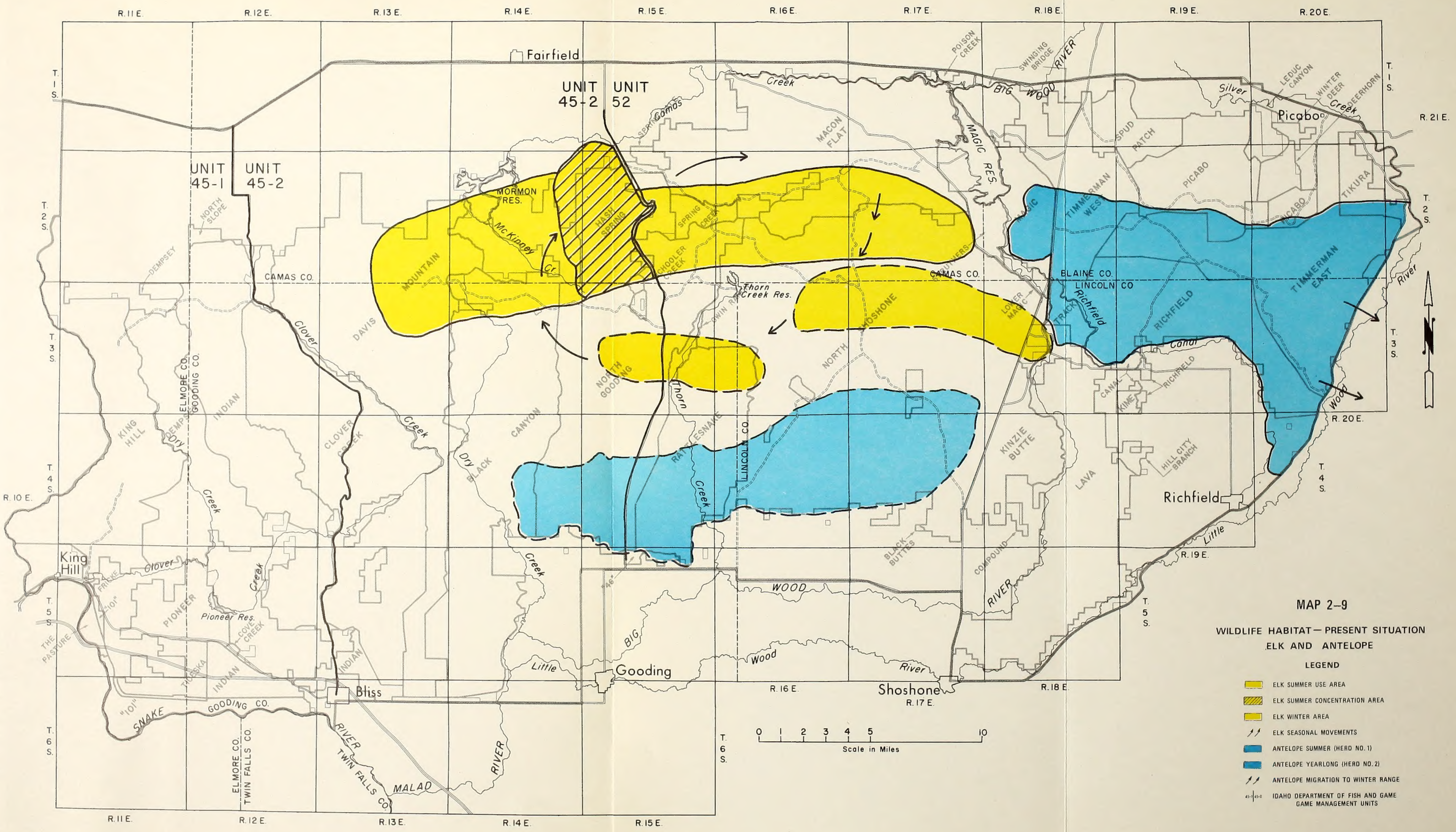
Competition for forage between elk and livestock does not appear to be a present problem. The lack of competition results primarily from one of two factors: (1) the elk have selected areas which are in good condition, thus affording sufficient forage for both elk and livestock, or (2) the elk have selected areas presently not grazed by livestock.

Antelope

Two antelope herds inhabit the ES Area. A small population resides year-long in the south-central portion of the area. Another small herd inhabits the eastern portion of the ES Area from March through October and spends the remaining months outside the ES Area. Map 2-9 shows the location of the major antelope use areas.

Each herd is estimated to contain approximately 30 head (refer to Table 2-18). Ten years ago neither herd was larger than several animals each.

No dietary information is available concerning these animals. Studies in areas with similar habitat show antelope eating 60-90



MAP 2–9

WILDLIFE HABITAT— PRESENT SITUATION ELK AND ANTELOPE

percent shrubs (Berrat 1974; Severson, L., M. May, and W. Hepworth 1968; Taylor 1975). Big sagebrush and succulent forbs are important forage components. Grass is preferred during the early spring but eaten sparingly thereafter.

The antelope habitat conditions can generally be described as poor. The populations are small and the animals range over such a wide area that it is extremely difficult to quantify the specific condition. Table 2-21 identifies the acres of major use areas by allotment and the present condition.

TABLE 2-21

MAJOR ANTELOPE USE AREAS
CONDITION, ACREAGE, AND PERCENT OF PROPOSED ALLOTMENTS

Allotment 1/	Antelope Summer Range		Antelope Yearlong Range		Total Antelope Range		Habitat Condition (Percent) 3/		
	Acres	Percent 2/	Acres	Percent 2/	Acres	Percent 2/	Poor	Fair	Good
Black Canyon			2,160	4	2,160	4	100	0	0
Magic	3,680	54			3,680	54	60	40	0
North Gooding			10,600	24	10,600	24	90	10	0
North Shoshone			29,400	29	29,400	29	95	5	0
Picabo	1,600	11			1,600	11	95	5	0
Rattlesnake			10,920	52	10,920	52	95	5	0
Richfield Ctl.	22,975	100			22,975	100	60	40	0
Tikura	1,360	35			1,360	35	100	0	0
Timmerman East	30,426	100			30,426	100	60	40	0
Timmerman West	4,698	31			4,698	31	60	40	0
Track	2,024	100			2,024	100	0	100	0
Totals	66,763		53,080		119,843				

1/ Only the proposed allotments which support antelope use are listed
2/ Percentages are based on total public land acreage in allotments
3/ The classes of habitat condition are explained in Appendix 4.

The predominant vegetation on the major use areas includes Wyoming sagebrush, three-tip sagebrush, crested wheatgrass, cheatgrass, and annual forbs such as goatsbeard and Chinese lettuce. Competition between livestock and antelope appears to exist, but to date the degree of competition has not been quantified. Sheep and antelope have similar dietary preferences, specifically during the spring and winter months. Cattle are not generally known to compete with antelope for forage except during the early spring. However, competition between all herbivorous animals will occur when ranges are in poor condition and forage is limited.

Spatial competition exists when banded sheep are driven through fawning habitat and fawn cover areas. Cattle normally are not herded, thus their presence alone would not normally impact the antelope habitat.

Small Mammals

There are 41 small mammal species which inhabit the ES Area (see Appendix 4). The majority (85 percent) are dependent on vegetation, either directly (e.g., as a food source), or indirectly (e.g., for cover).

Birds

There are a total of 148 bird species which inhabit the ES Area during some period of the year. Appendix 4 identifies the species, their relative abundance, season of occurrence, and vegetation zones inhabited. Unlike the mammals, many of the birds are not year-long residents of the ES Area. Consequently, many of the effects of livestock grazing do not significantly affect the spring-fall migrants or the extremely mobile summer residents.

Following is the discussion of those species which have been identified in the applicable URAs as being most important.

Sage Grouse

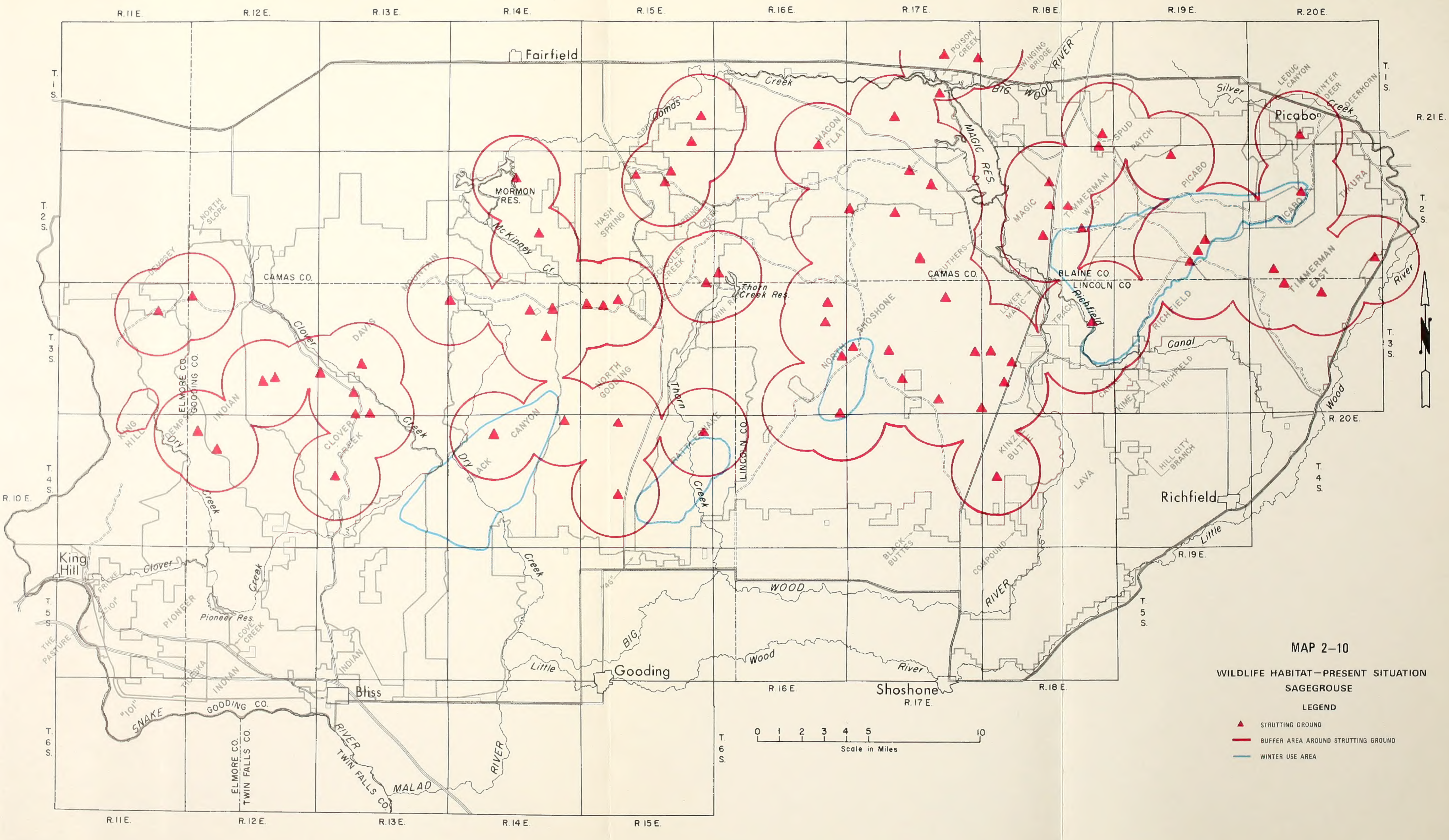
Sage grouse are the most important and wide-spread upland game birds in the ES Area. There are 82 known strutting ground locations which are identified on Map 2-10. Sage grouse are extremely specific in their habitat requirements. These birds are entirely dependent upon soft forage material, sagebrush being the most important plant species. Sagebrush comprises essentially 100 percent of their winter diet and is also very important throughout the spring and fall months (Sage Grouse Committee 1974). Insects and forbs such as Chinese lettuce, dandelions, desert dandelions, and goatsbeard comprise the major items in the summer diet.

The strutting grounds or leks are generally open areas that are surrounded by dense stands of sagebrush. A nest search study in the ES Area indicated that approximately 90 percent of the hens nest within 2 miles of the strutting ground (Personal Communication IDF&G 1975). This study also noted that hens tend to select the larger sagebrush for nesting.

Sage grouse within the ES Area exhibit a slight tendency to migrate north or up-slope during the summer months and south or down-slope in the winter. The winter use areas are comprised of dense sagebrush stands normally exceeding a 20 percent canopy coverage. Winter use areas are presented on Map 2-10.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves

Chukars were introduced into the area in the late 1940s and peak populations occurred in the mid to late 1950s (Personal Communication IDF&G 1972). Since that time the populations have



MAP 2–10

WILDLIFE HABITAT—PRESENT SITUATION
SAGEGROUSE

LEGEND

▲ STRUTTING GROUND
🟥 BUFFER AREA AROUND STRUTTING GROUND
🟦 WINTER USE AREA

0 1 2 3 4 5 10
Scale in Miles

decreased but now appear to be static. The birds are scattered throughout the ES Area, along the rocky canyons and talus slopes. The birds normally are associated with stands of native grasses interspersed with cheatgrass.

Hungarian partridge are scattered throughout the ES Area, and can be found in practically all vegetation zones.

Pheasants, quail, and doves are also present in the ES Area. Doves are migratory, but utilize several vegetation zones throughout the late spring and summer months for nesting. They normally depart about the time of first frost.

Pheasants are predominantly associated with agricultural land, although the sagebrush tracts adjacent to these lands provide important escape and winter cover.

Quail populations and use areas are extremely limited in the ES Area because of the generally harsh winter conditions. Their occurrence in the ES Area is restricted to the extreme western edge, lying adjacent to King Hill Creek and the Snake River, where moderate winter conditions predominate.

Waterfowl

The Shoshone ES Area lies in the eastern third of the Pacific Flyway. A large number of ducks and geese migrate through the area due to the proximity of the Snake River, a major travel route for migrating waterfowl. Canada geese, mallards and teal are common. Most reservoirs and open waterways support nesting populations of ducks and some geese. The larger reservoirs, Mormon and Magic, contribute significantly to habitat for fall geese populations. Duck nesting habitat is limited due to low density of vegetation around most waterways, although there is some nesting and brood rearing taking place. Sagebrush generally provides adequate overstory cover, but excessive use of grasses and forbs by livestock has eliminated understory cover in many areas.

Threatened, Endangered, and Sensitive Wildlife

Bald eagles, the only endangered wildlife occurring in the ES Area, are found occasionally along the Snake River in the southwest corner of the ES Area during the winter. They migrate from the area in the summer. No nesting occurs in the ES Area.

There are no threatened wildlife species occurring in the ES Area. Sensitive species on the IDF&G/BLM Sensitive Species List which are known to occur in the ES Area are: river otter, Canada lynx, bobcat, ferruginous hawk, osprey, pigeon hawk, mountain quail, long-billed curlew, and western burrowing owl. With the exception of the western burrowing owl, all are rare or uncommon. The western burrowing owl is common in the southern half of the ES Area. Its habitat usually consists of flat, open terrain that has been disturbed. The presence of annual vegetation and absence of shrubs is typical habitat. Burrows of badgers and yellow-bellied marmots are favorite sites for residence.

FISHERIES

Information for major streams and water bodies in the Shoshone ES Area is presented in this section. Descriptive information is summarized from a report by Rabe, et al. (1976), based on data collected in July and August 1976 on the more important streams and reservoirs within the ES Area. The investigation was funded by a contract from BLM, and the full report is available at the Shoshone District Office. Prior to initiation of their field work, guidance was provided by Idaho Department of Fish and Game fisheries biologists about streams which should be included in the inventory.

Streams

In Table 2-22 fisheries data for the streams are listed. Miles of stream in good, fair, and poor fish habitat categories are, respectively, 41.2 (59 percent), 13.9 (20 percent), and 14.9 (21 percent). For areas with fair and poor conditions (41 percent of the linear mileage) most of the habitat impairment is attributed to abuses by livestock (Rabe, et al. 1976). The influence of livestock on aquatic habitat is exemplified by the fact that good habitat exists (Map 2-11) in zones where access by the animals is limited or prevented by natural obstacles such as rugged terrain. This correlation was noted by Rabe, et al. (1976). They state that King Hill Creek is an example of how good habitat exists only when there is a steep canyon that limits cattle use. In areas where natural flows are limited, such as East Dempsey Creek, livestock damage to fish habitat is compounded. Where stream flows are lessened by the withdrawal of irrigation water, such as at Lower King Hill Creek and that portion of Clover Creek near White Arrow Corral, fish habitat suffers adverse effects in addition to the habitat damage attributed to livestock.

Low stream flows tend to limit potential game fish production in the ES Area, regardless of livestock management practices.

Reservoirs

A summary of fishery information for the seven major reservoirs found within the ES Area is shown in Table 2-23. The fishery values vary from poor to excellent, depending upon each reservoir's physical properties. Grazing does not play an important role in the aquatic habitat condition of the reservoirs; consequently, there will be no discussion concerning the impacts to reservoir aquatic habitat by livestock.

TABLE 2-22
FISHERIES DATA FOR SELECTED STREAMS WITHIN THE SHOSHONE ES AREA

STREAM 1/	GAME FISH REPORTED 2/	FLOW 3/ (cfs)	MILES OF FISH HABITAT ON PUBLIC LANDS BY CONDITION CLASS			REASONS FOR FAIR AND POOR HABITAT 4/	PRESENT FISHERY RATING 5/	PORTION OF STREAM ON PUBLIC LAND (%)
			GOOD	FAIR	POOR			
King Hill Creek	Bb, Cc, Yp, Rb, Sb, Lm, Bg	44	9.6	2.0	0.3	L, DW, F	Good	57%
Dry Creek	Trout 6/	.1	8.0	0	0	-	Poor	85
E. Dempsey Creek	None	.1	0	0	5.2	L, F	Poor	88
Hog Creek 7/	None	.1	0	6.8	0.4	L, F	Poor	86
Clover Creek	Rb, Sb	12	8.0	2.8	4.8	L, DW	Poor	52
Dry Creek 8/	Rb, Ct	1	8.0	0	1.2	L, F	Poor	70
Big Wood River	Rb, Sb, Yp	402	4.8	0	1.2	L	Good	75
Camas Creek	Rb	14	2.8	1.8	1.8	L	Poor	15
Silver Creek	Rb, Bt, Br, Wf	168	0	0.5	0	L	Good	3
Condition Class Totals			41.2	13.9	14.9			
Percentage of Total/Class			59%	20%	21%			

1/ The stream locations in relationship to allotments are shown on Map 2-11.

2/ Rb=Rainbow trout, Sb=Smallmouth bass, Lm=Largemouth bass, Yp=Yellow perch, Bg=Bluegill, Ct=Cutthroat, Bb=Brown Bullhead, Cc=Channel cat, Bt=Brook trout, Wf=Whitefish, Br=Brown trout.

3/ Estimated flows during the 1976 sampling in July and August.

4/ L = Livestock damage, DW = Irrigational dewatering, F = Natural low flows.

5/ Ratings are based on flow characteristics and other data. Fishery potential in the "poor" streams is restricted by low flows, regardless of habitat condition (Rabe, et al. 1976).

6/ The inventory team did not report species.

7/ Upper section fishless, lower section contained fish which were not collected or identified.

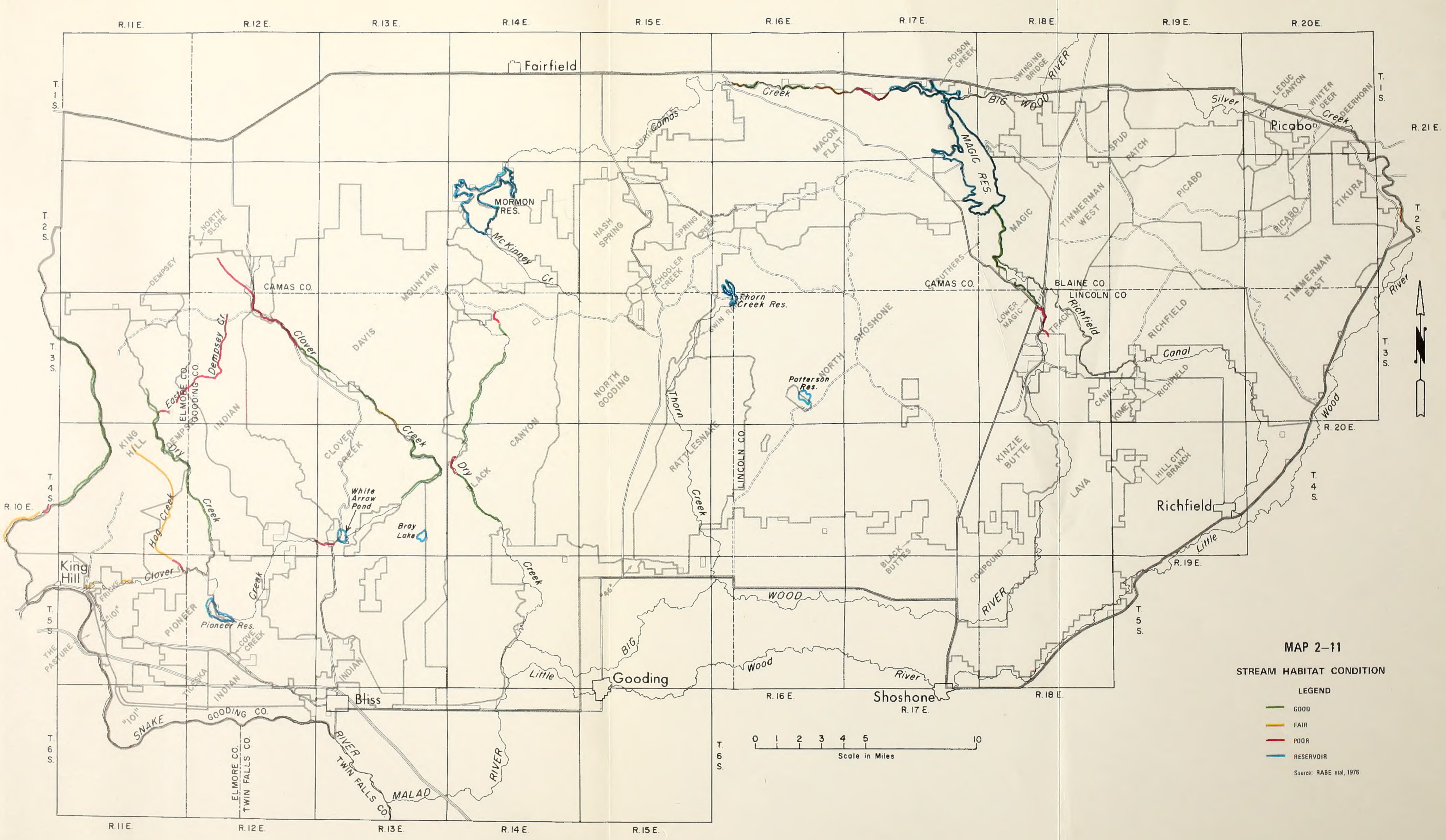
8/ Tributary of Big Wood River.

TABLE 2-23

FISHERY DATA FOR WATER BODIES IN THE SHOSHONE ES AREA

Water Bodies	Surface Acres	Acre Feet	Estimated Summer Drawdown (feet)	Fishery Value 1/	Principal Game Fish 2/	Total Miles of Shoreline	Ownership of Shoreline		Major Factors Contributing to Impared Fishery Conditions 3/
							Private	BLM	
Bray Lake	60	600	15	P	Yp, Cc	1.3	0	1.3	DW
Patterson Reservoir	25	45	7	G	Lm, Bg	.6	.6		WK, DO
Pioneer Reservoir	180	515		F	Yp, Lm, Bg	4.9	1.7	3.2	DW
Thorn Creek Reservoir	90	1,050	5	E	Rb	3.9	2.9	1.0	WK 4/
White Arrow Pond	50	100	2	G	Lm, Bg	1.2	0	1.2	
Mormon Reservoir	1,500	32,000	10	G	Rb, Yp	16.5	2.5	14	
Magic Reservoir	3,420	191,000	35	G	Rb, Yp	23	7.5	15.5	
Total						51.4	15.2	36.2	
Percent							30%	70%	

1/ E = Excellent, G = Good, F = Fair, P = Poor
2/ Refer to Table 2-22 for species coding.
3/ DW = Dewatering, WK = Winter Kills, DO = Low Dissolved Oxygen Concentrations
4/ Due to low dissolved exygen concentrations



MAP 2–11

STREAM HABITAT CONDITION

LEGEND

🟩 GOOD
🟧 FAIR
🟥 POOR
🟦 RESERVOIR

Source: RABE etal, 1976

Special Aquatic Considerations

In Dry Creek (located in Black Canyon Allotment) there is an isolated population of trout which are tentatively identified as rainbow cutthroat hybrids. Dace are also found in this location. Rabe, et al. (1976) concluded that the area where the trout were isolated and the downstreams warm spring zone should be designated as a Research Natural Area (RNA) because of the unique habitat. During the summer of 1977, a fence was constructed to prevent livestock access to approximately 4 miles of the creek.

In the portion of Hog Creek located in the Dempsey Allotment, no fish were found by Rabe, et al. (1976), although the presence of unusually large populations of flatworms (which may be a unique occurrence) was reported. The investigators suggested that this fishless portion of the creek would be excellent for the study of aquatic invertebrates and recommended it for RNA designation. Further, the mid-section of Camas Creek (located in Macon Flat Allotment) was suggested for RNA status because of the abundance of wildlife, the presence of beaver ponds, limited human intrusion, and thick streamside vegetation.

Rabe, et al. (1976) did not report the presence of any endangered or threatened aquatic species in the ES Area. However, one sensitive species, the Wood River sculpin, was collected in watersheds draining into the area.

CULTURAL RESOURCES

The Bureau of Land Management defines cultural resources as those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were important in past human events. These resources consist of (1) physical remains; (2) areas where significant human events occurred, even though evidence of the event no longer remains; and (3) the environment immediately surrounding the actual resource. Cultural resources include both historic and prehistoric remains and represent a part of the continuum of events from the earliest evidences of man's presence to the present day.

Procedures

Procedures used to identify and evaluate cultural resources within the Shoshone ES Area included: (1) a literature search of historical, archaeological, and enthnographic sources; (2) consultation with individuals knowledgeable of the cultural resources of the area; (3) a search of the Idaho State Site Survey file; (4) a review of artifacts located in storage at the Idaho Museum of Natural History; (5) a search of the Idaho State Historical Society Site file; (6) an archaeological reconnaissance conducted by Idaho State University during the 1974-75 field seasons; (7) field inventories conducted by BLM cultural resource management specialists during routine field investigations; and (8) consultation with the State Historic Preservation Office regarding cultural resource sites currently listed on or determined eligible for listing on the National Register of Historic Places, as well as those sites which appear to meet the eligibility criteria but for which no formal determination has yet been accomplished.

Data obtained from the 1974-75 reconnaissance provide nearly all the quantitative and qualitative information about the cultural resources in the ES Area. Site types include open sites, micro-open sites, quarry sites, petroglyph/pictograph (rock art) sites, cave/rockshelter sites, sites with rock structures, and historic structures and roads.

During the cultural resource inventory two sampling strategies were employed to generate baseline data concerning site type and location. The first was a judgmental strategy and the second, employed only during the second field season, was a systematic stratified random strategy (Cinadr 1976). A generalized model of site location was devised that has aided in subsequent site identification in the ES Area.

All cultural resources have some degree of significance and must be considered in the BLM planning and management systems. However, not all cultural resources are of equal value or significance. In general, the following seven criteria were employed to evaluate the significance of the cultural resource sites in the ES Area: (1) quality of cultural material, (2) quantity of cultural material, (3) uniqueness of location, (4) uniqueness of site itself, (5) depth of deposit, (6) degree of preservation, and (7) representativeness vis-a-vis other known sites.

In the Shoshone ES Area evaluations were based upon data gathered during the various field surveys of the land surfaces and features. While this procedure lacks the scientific rigor associated with subsurface testing and excavation, it is considered adequate to determine if sites merit consideration for nomination to the National Register of Historic Places. To be considered eligible for inclusion on the National Register, a site must be associated with events that have made a contribution to the broad patterns of history and/or aid in chronological, technological, or settlement studies, or be useful in the reconstruction of the events and activities which took place at it.

Cultural Resource Sites

There are 300 known cultural resource sites within the ES Area. Of these, a total of 41 aboriginal sites, 38 of which are on public lands, appear to merit inclusion on the National Register, but formal determinations of eligibility have not yet been accomplished. Additionally, several historic sites are thought to be eligible for nomination to the National Register, but additional information and search is needed in order to make a final determination (Dr. Thomas Green, personal communication 1977). These are: (1) Town of Stanton, Stage Stop, and Post Office; (2) Sanguins City; (3) Town of Camas; (4) King Hill Stage Station; (5) Clover Creek Stage Station; (6) King Hill School; (7) Bank of Idaho in Richfield; and (8) Richfield Hotel. None of these sites are on public lands.

Portions of the Kelton Stage Road and Goodale's Cutoff from the Oregon Trail are also considered eligible for the National Register but the trails need to be inspected to determine which sections can be preserved. Formal determination of eligibility has not yet been accomplished. Only one site within the ES Area is listed on the current National Register and that is the Historic District of Shoshone, located within the Town of Shoshone on the southernmost boundary of the ES Area. There are currently no aboriginal sites in the ES Area listed on the National Register. It should be noted that there are probably many more sites and perhaps other districts in the ES Area which merit consideration for National Register nomination. In most cases these are not well understood at this time but may later play a significant role in providing scientific information and in understanding our national heritage.

Table 2-24 shows the factors adversely affecting the known cultural resources of the area. Table 2-25 lists known cultural resources which may be eligible for inclusion on the National Register of Historic Places.

The vast physical size of the ES Area absolutely precluded a complete cultural resource inventory prior to the writing of this document. Currently, there is no way to accurately predict how many cultural resource sites remain to be discovered in the ES Area or to say what their significance will be. The various inventories, covering 5-6 percent of the total surface area, have resulted in the recordation of some 300 sites, so that an approximation, assuming an average number of sites were located per acreage inventoried, suggests a potential total of 6,000.

Human Occupation and Use Summary

The known site types and their locations in the ES Area allow for some reconstruction of the history of the area's human use and occupation.

From remains recovered at Wilson Butte Cave (Gruhn 1961) near the southern boundary of the ES Area, it can be stated with some degree of certainty that man has been present in the region since prior to the end of the Pleistocene (approximately 14-15 thousand

TABLE 2-24

CONDITION OF CULTURAL RESOURCES BY ALLOTMENT

	EXISTING FACTORS AFFECTING KNOWN CULTURAL RESOURCES IN ES AREA 1/							
Proposed Allotment	Total Known No. of Sites	Livestock Trampling	Accelerated Erosion	Project/ Activities	Vandalism/ Amateur Disturbance	Geologic Erosion	Undis- turbed	No. of Significant Sites
Black Buttes	0							
Black Canyon	20	4	4	12	7	7	4	3
Canal	0							
Clover Creek	34	5	6	5	12	17	1	5
Compound	0							
Cove Creek	0							
Davis Mountain	14	2	2	7	1	9		1
Dempsey	23	2	7	3	1	17	2	3
Fricke	0							
Gwin Ranch	0							
Hash Spring	8	1	1		1	6	2	1
Hill City Branch	0							
Indian	39		6	5	7	24	10	9
Kime	0							
King Hill	8		3	2	3	5	1	1
Kinzie Butte	1		1		1	1		1
Lava	1				1	1		
Lower Magic	1				1	1		
Macon Flat	19	6	4	8	2	6	3	1
Magic	2	1		1	1	2		
North Gooding	33	7	5	13	4	28	4	1
North Shoshone	14	3	4	2	3	7	4	3
North Slope	0							
Picabo Cattle	0							
Pioneer	5	1	3	2	1	3	2	3
Poison Creek	1		1	1		1		1
Rattlesnake	22	9	11	6	2	13	2	
Richfield Cattle	0							
Schooler Creek	2	1	1		1			
Spud Patch	2	1	1	2		1		
Spring Creek	1	1	1	1	1			
Springdale	0							
Struthers	0							
Swinging Bridge	0							
The Pasture	3	2	2		3	1		2
Ticeska	1			1				
Tikura	0							
Timmerman East	0							
Timmerman West	3			1	1	3		1
Track	0							
"46"	0							
"101"	14				14	11		5
Unallotted Areas	29							10
Totals	300	46	63	72	68	164	35	51
% of Total 1/		15.3%	21%	24%	22.6%	54.6%	11.6%	17%

1/ Some cultural resource sites are being damaged by multiple factors.

TABLE 2-25

KNOWN CULTURAL RESOURCES IN THE ES AREA
POSSIBLY ELIGIBLE FOR NOMINATION TO THE NATIONAL REGISTER OF HISTORIC PLACES

CULTURAL RESOURCE SITE NUMBER OR NAME	ATTRIBUTES/CONDITION	PERIOD	
		PREHISTORIC	HISTORIC
10EL22 Clover Creek Site	Large open site on Snake River; diagnostic artifacts; good depth; disturbed by vandals and stock trampling.	x	
10EL32	Open site on Snake River; good depth; disturbed by vandals	x	
10EL33	Open site on Snake River; good depth, diagnostic artifacts; disturbed by vandals	x	
10EL35	Large open site on Snake River; good depth; features and small shelter; disturbed by vandals	x	
10EL44	Large open site on Snake River; good depth; disturbed by vandals	x	
10EL86	Large open site on Snake River; good depth; disturbed by vandals	x	
10EL168	Large open campsite with rockshelters; diagnostic artifacts; undisturbed	x	
ID-05-77-1 (BLM)	Large open site on Snake River; good depth; diagnostic artifacts; erosion	x	
ID-05-77-15 (BLM)	Large open site; diagnostic artifacts; largely undisturbed; spring at site with some trampling	x	
King Hill Stage Station	Historic structure		x
King Hill School	Historic structure		x
10CM6	Large; located at spring; good depth; collected by amateurs	x	
10CM43	Large open campsite; diagnostic artifacts; disturbed by reservoir	x	
10CM67	Unique location; diagnostic artifacts; largely undisturbed	x	
10CM70	Large open site; many diagnostic artifacts; some depth; largely undisturbed	x	
Sanguin's City	Deserted agricultural community		x
Town of Camas	Deserted agricultural community		x
10GG12	Unique artifact	x	
10GG13	Series of lava tube shelters; diagnostic artifacts	x	
10GG20	Large flake scatter with many petroglyphs; large spring at site; some depth	x	
10GG34	Large open site; many diagnostic artifacts; several rock enclosures/alignments	x	
10GG47	Large open campsite; many diagnostic artifacts; erosion, road through site	x	
10GG54	Large open quarry site	x	x?
10GG66	Large lithic scatter-campsite on mesa top with associated rockshelters; diagnostic artifacts; highly eroded	x	
10GG74	Large open site; many diagnostic artifacts; much lithic detritus in concentrated area; largely undisturbed	x	
10GG75	Fairly large open site, many diagnostic artifacts; some depth, highly eroded	x	
10GG77	Petroglyphs, undisturbed; excellent representative of site-type	x	
10GG88	Large open site with petroglyphs; diagnostic artifacts; wide variety of toolstone raw materials	x	
10GG96-98	Series of open sites associated with petroglyphs; many diagnostic artifacts	x	
10GG100	Large open site; many diagnostic artifacts, much lithic detritus; soil highly eroded	x	
10GG101	Large campsite with petroglyphs; many diagnostic artifacts; rock enclosures; features	x	
10GG115	Large open site; diagnostic artifacts; much lithic detritus; wide range of toolstone raw materials	x	
10GG116	Large open site; diagnostic artifacts; stream and wind erosion	x	
10GG120	Open campsite; good depth; some erosion but most of site still buried	x	
10GG121	Wagon ruts from old Kelton Stage Road; erosion		x
10GG134	Unique stone structure associated with an undisturbed rockshelter; unique location	x	
10GG145	Large open site; diagnostic artifacts; heavy erosion	x	
10GG148	Large open site; many diagnostic artifacts, some depth	x	
ID-05-77-4 (BLM)	Large open site; many diagnostic artifacts, undisturbed	x	
Clover Creek Stage Station	Stone structure and grounds of stage station on Kelton Overland Route		x
10BN51	Large open quarry site; highly concentrated lithic detritus; largely undisturbed	x	x?
Goodale's Cutoff	Historic trail for pioneers and freight; erosion		x
Town of Stanton, Stage Stop and Post Office	Deserted mining town		x
10LN48	Unique location	x	
10LN51	Unique location; unique structural features	x	
10LN54	Rockshelter and pictographs; undisturbed; excellent representative of site type	x	
10LN58	Very large open site with rockshelter; diagnostic artifacts; undisturbed	x	
Bank of Idaho, Richfield	Historic structure		x
Richfield Hotel	Historic structure		x

years). These early Paleo-Indian big game hunters probably ranged throughout the ES Area. Deeply stratified caves and rockshelters, which abound in the Bennett Hills, may contain undisturbed and recoverable remains of these people, including information on the natural environment in which they lived.

An accurate assessment of prehistoric resource exploitation patterns and time depths for human occupation will only be gained through future systematic archaeological excavations. Notably, the Bennett Hills, and associated environs, which comprise the majority of land in the ES Area, represent a bounded natural laboratory for these studies. Their proximity to the Snake River and the Camas Prairie allowed for a circumscribed geographic area in which the yearly round of hunting, fishing, and collecting of plant resources could be accomplished. Additionally, sources of raw material, especially ignimbrite, occur throughout the ES Area. Artifacts made from Bennett Hills ignimbrite dating to 10,000 years before present time (BP), have been discovered as far away as the Middle Fork of the Salmon River.

For the period following white contact (1820-1840) there is good information to suggest the nature of food quest activities in the ES Area. Winters were spent in encampments along the Snake and to a lesser extent on Camas Prairie. Evidence of the winter camps can still be seen on the Snake and an excavation at one such site is currently being carried out near King Hill.

Following spring salmon runs the aboriginal people moved north to the Camas Prairie, passing directly through the ES Area. During the fall individual family units began making their way back south towards the river, utilizing many of the same routes. Many, if not most, of the known aboriginal cultural resource sites in the ES Area are the remains of these semiannual journeys. Included in this category are the numerous temporary camp sites, particularly prevalent in the King Hill, Dempsey and Indian allotments; caves and rockshelters, particularly along the major drainages such as Clover Creek; and the abundant examples of rock art found throughout the Bennett Hills. The importance of the sites in the ES Area for understanding the lifeways of the native peoples of southern Idaho cannot be overestimated.

The first white contact with the area and its native peoples occurred around 1812, in the form of trapper-traders. No known sites in the ES Area can be tied to this period.

Following the demise of the fur trade by the late 1830s, the route of the Oregon Trail was established across southern Idaho. Although the main route was south of the ES Area, an alternate northern route, known as Goodale's Cutoff, was established about 1852. As noted above, portions of this road can still be seen in the northeastern section of the ES Area.

The pressures of white settlement increased beginning about 1860, when mining activities in the Boise Basin brought frontiersmen of all kinds into and through the area. Livestock raising began to gain importance in the ES Area in the 1870s (Idaho State

Historical Society 1974). The remnants of this activity take the form of isolated cabins, stone building foundations, and stone enclosures that appear to have functioned as stock-holding corrals.

The historic Kelton Road, portions of which are still observable in the southwestern section of the ES Area, was an important mail and freight route in the 1870s and 1880s, especially prior to the completion of the (then) Oregon Short Line Railroad. The coming of the railroad solidified the white dominance of the area. The remains of some work camps used when building spur lines to Fairfield and the Wood River Valley can still be seen in the general vicinity of Magic Reservoir.

VISUAL RESOURCES

Scenic Quality

The scenic quality of the entire ES Area has been evaluated and categorized as either "A" (high), "B" (moderate), or "C" (low), as shown on Map 2-12. These ratings of scenic quality are based upon considerations of land form, color, water, vegetation, uniqueness, and intrusions according to the Visual Resource Management (VRM) System presented in BLM Manual 6310. Although there is wide variation within each scenic quality category, a general description can be given for a typical landscape having each rating.

High scenic quality ("A" rating) is generally represented by highly eroded formations, severe surface variation, a variety of rich colors and vivid contrasts, the presence of water as a dominant factor, a harmonious variation in vegetation, the presence of rare or unusual features, and the absence of any undesirable or discordant sights and influences. An example of an area rated as high scenic quality is shown in Figure 2-2.

Low scenic quality ("C" rating) is typified by generally flat topography, very little color contrast, absence of water, monotonous vegetation, common features, and possibly the presence of undesirable or discordant sights and influences. An example of low scenic quality is shown in Figure 2-3.

Moderate scenic quality ("B" rating) includes many combinations of factors, i.e., all factors may be intermediate or some may be typical of "A" scenery while others are typical of "C" scenery. Two examples of moderate scenic quality are shown in Figures 2-4 and 2-5.

Visual Resource Management Classes

The VRM System (BLM Manual 6310) provides for categorizing areas into classes according to the type of management which is

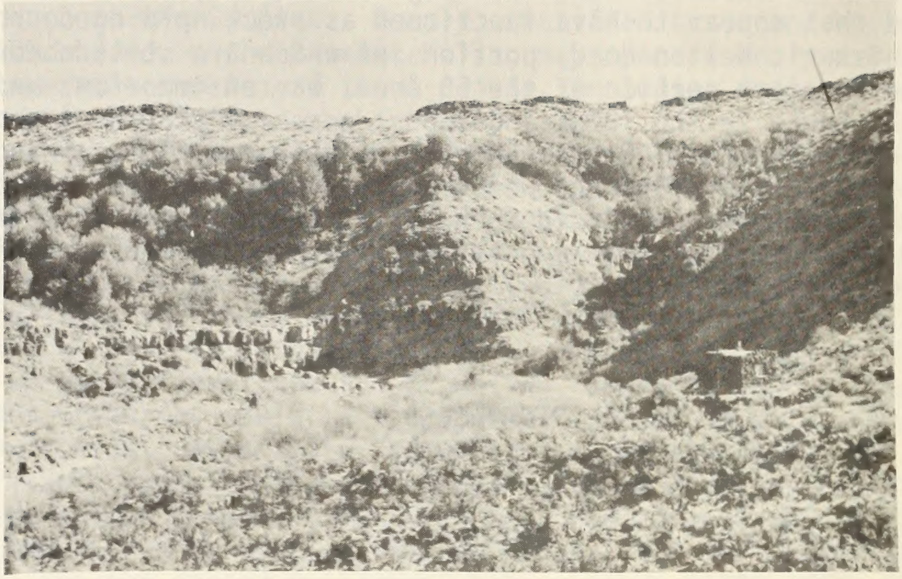


Figure 2-2. Example of high scenic quality (VRM rating "A") in the ES Area, showing variety in land form, vegetation, and color. Uniqueness and presence of water area additional attributes of this landscape.

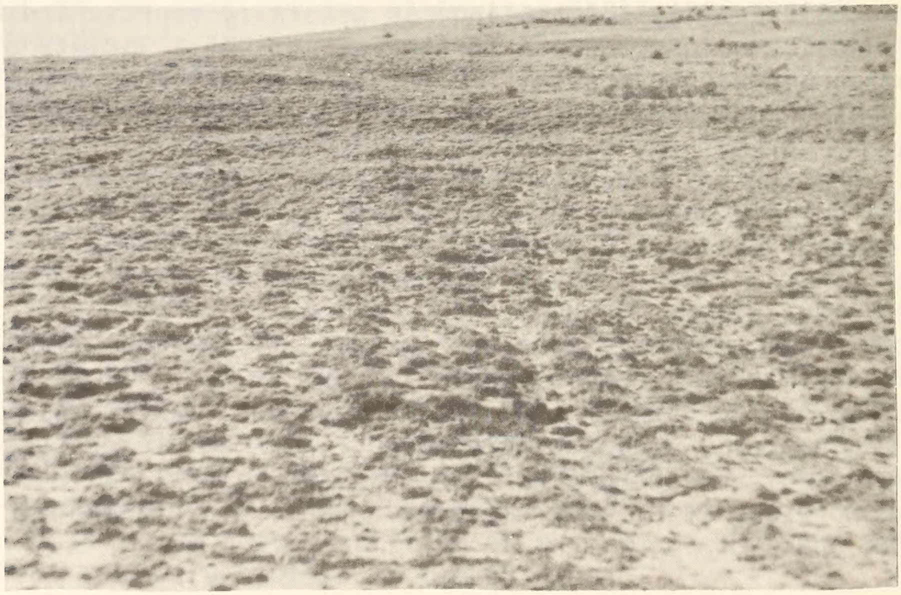
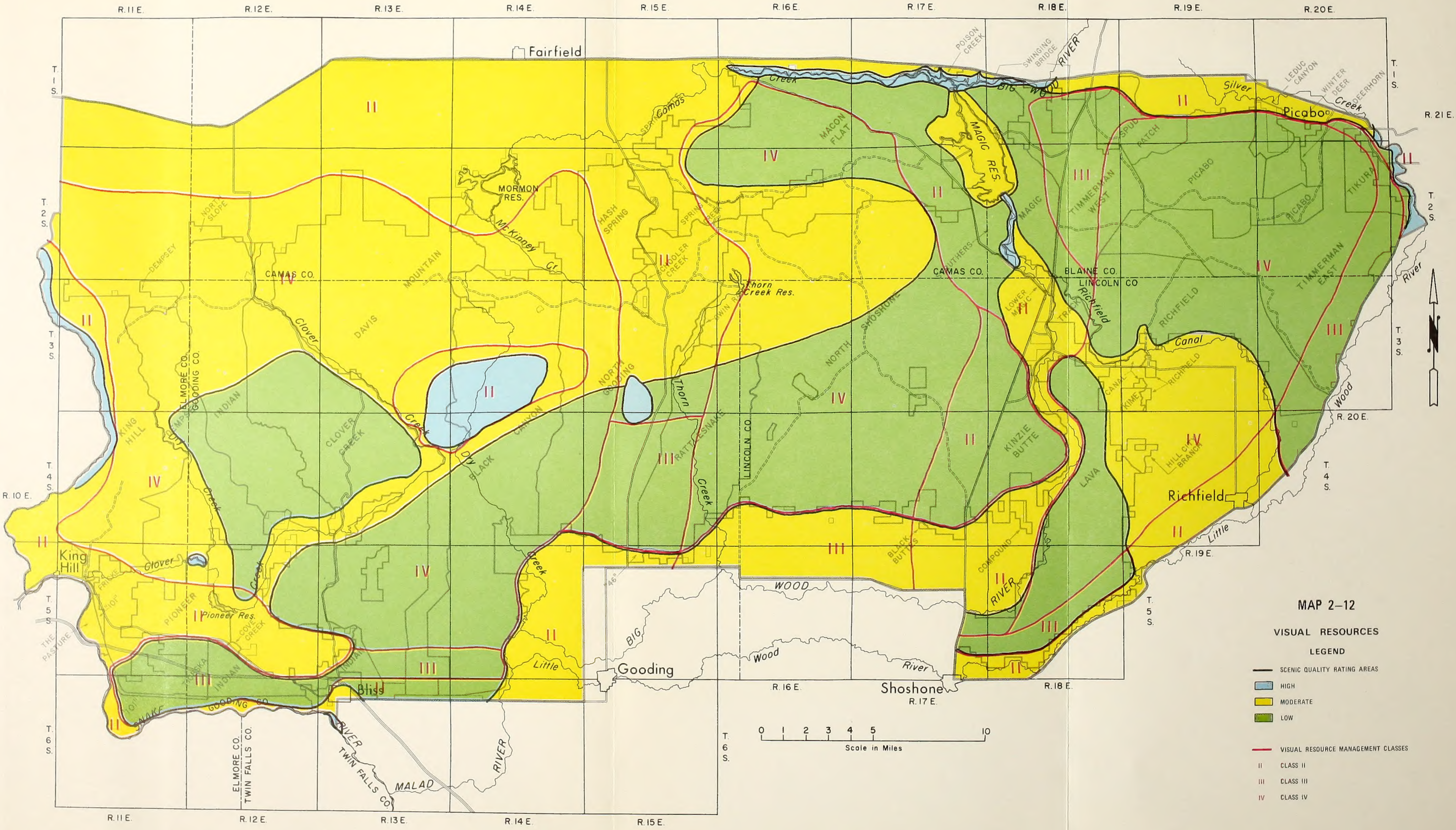


Figure 2-3. Example of low scenic quality (VRM rating "C") in the ES Area, showing flat terrain and lack of variety and color.



MAP 2–12

VISUAL RESOURCES

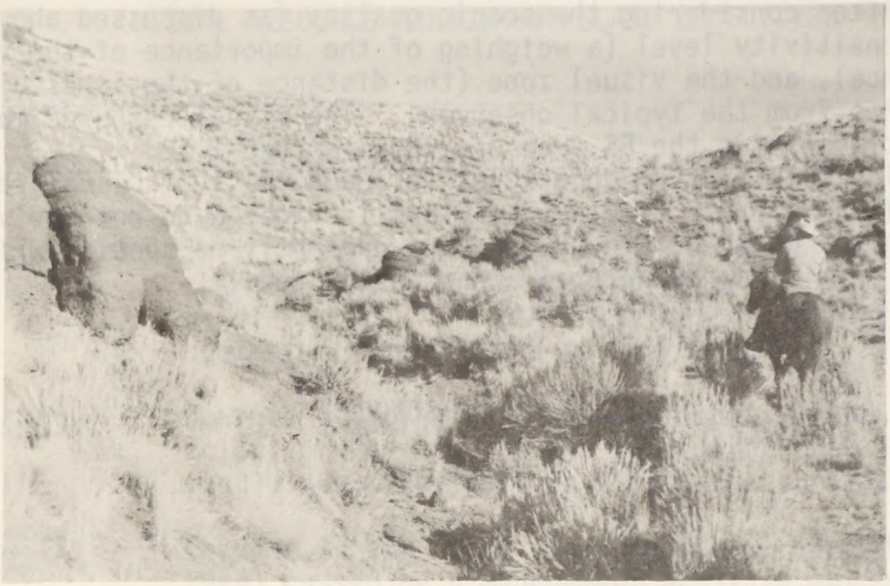


Figure 2-4. Example of moderate scenic quality (VRM rating "B") in the ES Area, showing limited variety in land forms and contrasts in color.

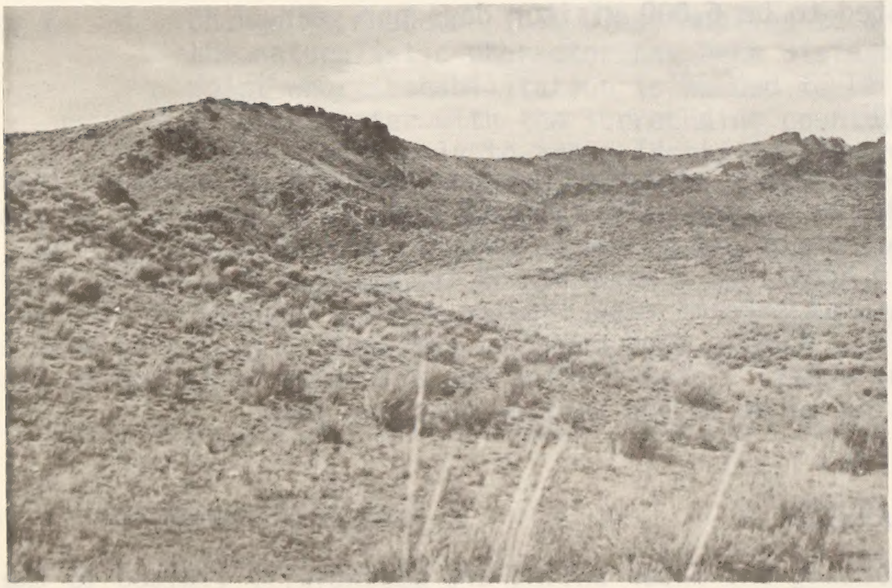


Figure 2-5. Example of moderate scenic quality (VRM rating "B") in the ES Area, showing hilly terrain and variety in vegetation.

appropriate for the visual resources. These classes are delineated after considering the scenic quality (as discussed above), the sensitivity level (a weighing of the importance of the visual resource), and the visual zone (the distance of the landscape features from the typical observer). The visual resource management classes for the ES Area are shown on Map 2-12.

The specific VRM objectives for each class of visual resources are given in Table 2-26. (The Class I criteria do not apply within the ES Area, since there are presently no special wilderness, primitive, or natural areas designated.)

RECREATION RESOURCES

Hunting

The Shoshone ES Area provides good opportunities for hunting upland game, small game, and waterfowl. Big game (mule deer, elk, and antelope) are present in increasing numbers, but there is presently no hunting season for them. Prior to 1975 mule deer were hunted in the area, and it is anticipated that a season will be reopened within the next few years. Elk and antelope seasons may be established if the populations increase sufficiently. Total hunting use presently attributable to public lands in the area is estimated to be 6,000 visitor days per year.

Fishing

Some of the best fishing opportunities in southern Idaho are provided by waters within the ES Area. The locations of some of the more important fishing resources are shown on Map 2-13.

In addition, a majority of the smaller reservoirs, canals, and natural streams also provide varying degrees of fishing opportunities. Public land provides substantial access to most of the fishing areas. Total fishing use attributable to public lands is estimated to be 98,500 visitor days per year.

Water Sports

Boating and water skiing are essentially limited to the Snake River and Mormon and Magic Reservoirs. Although swimming occurs in these waters and also in other reservoirs, streams, and canals within the ES Area, it is not presently considered to be a major use. Total water sports use attributable to public lands is estimated to be 5,400 visitor days per year.

TABLE 2-26

VISUAL RESOURCE MANAGEMENT CLASS OBJECTIVES

VRM Class		VRM Objectives
Class I	-	This class provides primarily for natural ecological changes only. It is applied to primitive areas, some natural areas, and other similar situations where management activities are to be restricted.
Class II	-	Changes in any of the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape.
Class III	-	Changes in the basic elements (form, line, color, texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
Class IV	-	Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
Class V	-	Change is needed. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. This class would apply to areas identified in the scenery evaluation where the quality class has been reduced because of unacceptable intrusions. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objective should be identified.

Source: BLM Manual 6310.18

Collecting

The ES Area is important to rockhounds for collecting various types of desirable stones, including petrified wood, geodes, fire agate, quartz, jasper, snowflake obsidian, bloodstone, moonstone, and opal. Some of the generalized locations of known collecting areas are shown on Map 2-13. A total of 300 visitor days of collecting use per year is estimated to be attributable to the public lands within the ES Area.

Off-Road Vehicle Use

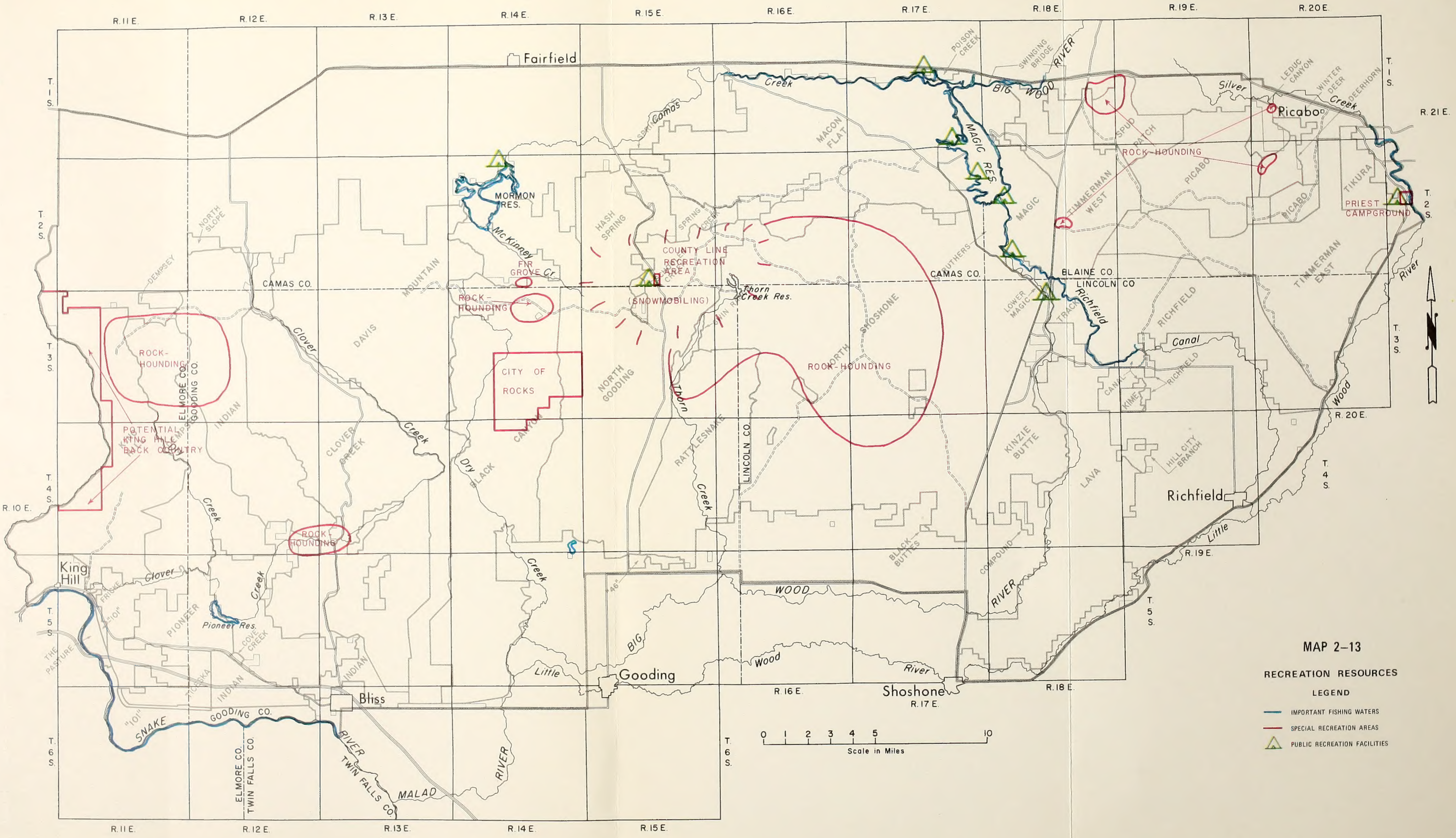
Four-wheel drive vehicles are used throughout the ES Area, usually in conjunction with other recreation pursuits such as hunting, fishing, rockhounding, or sightseeing. Motorcycles are used to a lesser extent in the same manner. Snowmobiles are used, during winters having sufficient snow, both for access for hunting, fishing, etc., and also as a form of recreation. One concentration area for snowmobiling is centered around the "County-Line Recreation Area," as shown on Map 2-13. Total off-road vehicle use (including snowmobiling) which is attributable to public lands, amounts to about 1,500 visitor days per year.

General Leisure and Sightseeing

Considering the extensive amount of land and generally undeveloped character of the Shoshone ES Area, most recreational activities like picnicking or camping occur in conjunction with other activities. Also, much of the visitor use is related to "exploring" back roads, looking for petroglyphs, observing wildlife, visiting areas of historical interest, etc. In addition, a great amount of "general sightseeing" occurs as motorists pass through or adjacent to public lands as they travel the major roads and highways in the ES Area. The total visitor use related to these types of activities attributable to public lands is estimated to be approximately 250,000 visitor days per year.

Recreation Facilities

Although the BLM has not fully developed any campgrounds or recreation areas within the ES Area, some facilities have been provided at several sites on public land. The facilities have been provided primarily to protect resources and visitor safety, not to encourage additional use. The facilities generally consist of parking areas, outdoor toilets, fireplaces, and/or garbage cans. They have been provided either directly by the BLM, or by the Idaho Department of Fish and Game or private organizations in



MAP 2–13

RECREATION RESOURCES

cooperation with the BLM. The location of sites with recreation facilities are shown on Map 2-13. Additional information on the special recreation areas is available in the Shoshone District Office.

Conflicts and Problems

Traditional resource management in the ES Area has caused certain conflicts with recreational uses. For example, local habitat conditions have restricted game population numbers, low water flows have reduced stream fisheries quality, and certain management practices have impaired primitive values. Presently, the aesthetics (particularly the appearance) of heavily grazed areas detracts from recreational enjoyment. Additionally, the presence of fences and gates tends to inconvenience visitors traveling through some areas. Present physical access provided by many of the dirt roads within the ES Area is poor. Except for Dempsey Meadow Road, no access easements have been acquired. Consequently, no actual legal access has been provided on most of the dirt roads within the ES Area.

WILDERNESS

At the time the land use planning for the ES Area was being compiled, BLM had no authority to establish wilderness areas; however, "primitive values" were inventoried under the BLM's Recreation Information System and were considered in the planning process. The identified primitive values were evaluated and rated according to key factors which approximate the criteria in the Wilderness Act of 1964. As a result of the BLM planning process one portion of the ES Area was identified as having potential for management as a "back country," which is generally considered less restrictive than management for wilderness. The potential back country area is located adjacent to King Hill Creek in the King Hill Creek Allotment and includes approximately 6,000 acres (Map 2-13).

Under Section 603 of the Federal Land Policy and Management Act of 1976 (FLPMA), BLM is required to review roadless areas of 5,000 acres or more that have been identified as having wilderness characteristics as defined in the Wilderness Act of 1964. To meet this requirement, the Shoshone District has made initial identification of all roadless areas of 5,000 acres or more. The Wilderness Inventory Handbook will be followed to determine what areas have wilderness characteristics, and thus warrant interim preservation. Congress will ultimately determine if any of the areas should be officially designated as wilderness.

Presently, a majority of the public land in the ES Area has been included in the tentative roadless area designations; however, none of these areas have been officially inventoried for wilderness characteristics or for suitability for preservation as wilderness under the provisions of FLPMA. Information regarding the location of the tentative roadless areas is available in the Shoshone District Office files.

AGRICULTURE

Crop Production

Farming is the most important economic activity on private land lying within the ES Area, but does not occur on public land. The majority of farm land is flood-irrigated by surface water. In recent years an increasing number of fields have been converted to sprinkler irrigation. Some dryland farming is done on the Camas Prairie, on the northern boundary of the ES Area.

Wheat and alfalfa are the primary crops grown in the northern part of the ES Area, while row crops are generally raised in the southern portion. The major row crops include potatoes, corn, sugar beets, and beans. Irrigated pasture also constitutes an important use of the private land throughout the ES Area.

Less than 10 percent of the private land outside allotment boundaries is base property for public land grazing privileges.

Livestock Grazing

The production of range cattle and sheep is an important agricultural land use within the ES Area. Currently, 112 permittees graze 13,430 cattle, 10,720 sheep, and 30 horses on 53 grazing allotments within the ES Area. Nearly all of the public land within the ES Area is utilized for grazing purposes by the licensed permittees. The existing active grazing qualifications on public lands within the ES Area total 83,120 AUMs. The five-year (1972-1976) average licensed livestock use totals 58,731 AUMs, which is 71 percent of active grazing qualifications. These totals are shown by proposed allotment in Table 1-5 in Chapter 1. For a comparison of existing allotment boundaries with proposed allotment boundaries, see Map 1-1.

The present grazing use is shown by proposed allotment in Table 2-27. Proposed allotments were used so that AUMs and animal numbers could be compared to other tabulated information. Of the total present grazing use on public land in the ES Area, 82 percent is by cattle and 18 percent is by sheep. Grazing use by horses makes up less than 1 percent of the total.

TABLE 2-27

EXISTING LIVESTOCK GRAZING USE
IN THE SHOSHONE ES AREA

ALLOTMENT NAME 1/	CATTLE		SHEEP		HORSES	
	AUMs	Number Animals	AUMs	Number Animals	AUMs	Number Animals
Black Buttes	7	7	---	---	---	---
Black Canyon	4,314	1,213	---	---	40	9
Canal	68	17	---	---	---	---
Clover Creek	2,751	550	1,013	975	---	---
Compound	83	30	---	---	---	---
Cove Creek	10	3	---	---	---	---
Davis Mountain	2,754	459	617	855	---	---
Dempsey	2,499	625	118	400	---	---
Fricke	17	8	---	---	---	---
Gwin Ranch	27	27	---	---	---	---
Hash Spring	300	67	80	200	20	6
Hill City Branch	89	25	---	---	---	---
Indian	3,972	795	965	2,415	21	10
Kime	138	46	---	---	---	---
King Hill	2,771	924	232	725	---	---
Kinzie Butte	1,026	324	300	250	---	---
Lava	2,499	534	---	---	---	---
Lower Magic	73	36	---	---	---	---
Macon Flat	3,280	2,187	1,399	1,190	---	---
Magic	1,118	280	---	---	---	---
North Gooding	---	---	2,344	3,550	---	---
North Shoshone	9,973	2,267	1,940	375	---	---
North Slope	122	35	---	---	---	---
Picabo Cattle	1,207	366	---	---	---	---
Pioneer	2,106	265	---	---	15	5
Poison Creek	---	---	10	30	---	---
Rattlesnake	2,065	688	---	---	---	---
Richfield Cattle	2,293	447	---	---	---	---
Schooler Creek	17	5	---	---	---	---
Spud Patch	330	131	---	---	---	---
Spring Creek	---	---	---	---	---	---
Springdale	23	8	---	---	---	---
Struthers	263	85	---	---	---	---
Swinging Bridge	---	---	166	420	---	---
The Pasture	93	41	---	---	---	---
Ticeska	826	275	---	---	---	---
Tikura	215	86	---	---	---	---
Timmerman East	---	---	967	2,040	---	---
Timmerman West	---	---	573	715	---	---
Track	308	90	---	---	---	---
"46"	25	11	---	---	---	---
"101"	579	475	---	---	---	---
TOTAL FOR ALL ALLOTMENTS 2/	48,241	13,432	10,724	14,140	96	30

1/ The 42 Proposed Allotments were used to display AUMs and livestock numbers so they can be easily compared to other tabulated information.

2/ Total AUMs do not add to the five-year average use of 58,731 because of rounding error. The 59,061 AUMs from cattle, sheep, and horse use is within one percent error.

Several permittees utilize both public lands and National Forest lands along with their private lands, enabling them to have a yearlong ranching operation. Eleven permittees using public land within the ES Area have sheep grazing permits for 47,395 head on the Sawtooth National Forest. Seven permittees have cattle grazing permits for 1,081 head. Two operators have combined sheep and cattle permits totalling 15,000 sheep and 598 cattle (see "Socioeconomic Conditions" for a more detailed description).

Nearly every one of the 102 cattle permittees (seven are also sheep permittees) operate typical cow-calf operations. The cows are bred to calve between January and March. Calves are weaned and sold in the fall when they return from their summer-fall pastures. Typically, cattle are driven to the spring ranges on public land between April 1 and April 15 and remain there until at least mid-June.

By the middle of June, operators with cattle permits begin grazing on the Sawtooth National Forest. Also, by that date, most high elevation private lands are also ready to graze. However, 74 of the 112 permittees within the ES Area continue to graze public land during the summer period after July 1. Summer grazing presently occurs on 32 of the proposed allotments (382,050 acres of public land, 68 percent of the total). Calves are normally gathered before October. By mid-October cattle at high elevation ranges on National Forest and private land are driven back to fall ranges on public land. Most cattle are moved to private land by mid-December. They are wintered on private land.

The seventeen sheep permittees begin lambing in late January and February. The ewe-lamb bands begin grazing public lands in the ES Area the first part of April. The sheep bands are moved rapidly over the land, "skimming" the green succulent growth for maximum lamb weight gains. Normally, all sheep are off the public lands by June 15. Thirteen of the seventeen sheep operators have sheep grazing permits for 62,395 sheep on the Sawtooth National Forest. Most of the sheep graze there through the summer. The other operators take their sheep to high elevation private grazing lands. The lambs, weighing 100-120 pounds, are gathered and shipped from the National Forest or private lands in late August. Dry ewe bands return to public land within the ES Area beginning in mid-October and continue as late as mid-December. They are wintered on private land.

Hay, grain, pasture, and crop aftermath produced on private irrigated lands are used for winter feeding of both cattle and sheep.

LEGISLATIVE CONSTRAINTS

Prior to enactment of the Taylor Grazing Act of 1934 ranchers had free and unlimited use of the "open range", which was comprised of unreserved and unappropriated public land. The purpose of the Taylor Grazing Act was "to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; to stabilize the livestock industry dependent upon the public range; and for other purposes." In addition, the Act required classification of public lands prior to their disposal, but it provided for continued unrestricted staking of mining claims as well as public hunting, fishing, camping, and other outdoor recreation.

Following enactment of the Classification and Multiple Use Act of 1964, all public lands were reviewed and classified either for disposal or for retention and management under the principles of multiple use and sustained yield. As a result of this review, the great majority of public lands in the ES Area were classified for multiple use and were segregated from appropriation under the agricultural land laws or acquisition under the public sale laws.

The National Environmental Policy Act of 1969 (NEPA) and subsequent Executive Orders, regulations, and other guidance have emphasized the need for protecting and enhancing the environment, especially on public lands. As a result of the court suit brought by the Natural Resources Defense Council, Inc., et al., it was ruled in 1974 that licensing livestock grazing on public lands is a major Federal action and the BLM must prepare, circulate, and consider detailed grazing ESs for specific areas of public lands.

Section 208 of the Clean Water Act (PL 92-500) provides for establishing water quality standards for nonpoint sources of pollution, such as public land grazing areas. Problem areas are currently being identified, and a statewide plan for reducing nonpoint pollution is being finalized.

The Federal Land Policy and Management Act of 1976, often referred to as the "BLM Organic Act", reaffirmed the direction for BLM's management in accordance with sound land use planning.

Information on the Bureau Planning System, county planning, intermingled private land, and other agency programs is presented in the "Interrelationships" section of Chapter 1.

TRANSPORTATION NETWORKS

Transportation systems in the ES Area consist of highways, roads, trails, railroads, and small airports (see Map 2-14.).

Interstate I-80N receives average daily traffic (ADT) in excess of 5,000 vehicles. The newly established "Sawtooth Scenic Route" (previously U.S. 93, now State Highway 75) supports about 1,500 vehicles ADT. The other major routes (U.S. 20, U.S. 93, and U.S. 26) each support approximately 700 to 800 vehicles ADT, and State Highway 46 supports about 300 vehicles ADT.

The Union Pacific Railroad crosses the southern portion of the ES Area, and spur lines extend from Shoshone to Hill City and Ketchum. The nearest airport having regular commercial flights is at Twin Falls, 25 miles south of the ES Area. The Gooding Municipal Airport has surfaced runways and can handle medium-sized planes. Smaller unsurfaced airstrips are located at Fairfield, West Magic, Shoshone, Picabo, and Richfield.

The network of secondary and unimproved roads throughout the ES Area is probably the most important key to the local transportation system. These roads are used extensively by local residents, ranchers, recreationists, and BLM administrators. A potential problem is posed by the fact that many of the unimproved roads cross private land without a formal easement for BLM or public use. In many cases the private landowners could restrict access on roads that lead to public land. Further information regarding designation and maintenance of particular roads within the ES Area is available in the BLM's Transportation Plan, filed at the Shoshone District Office.

SOCIOECONOMIC CONDITIONS

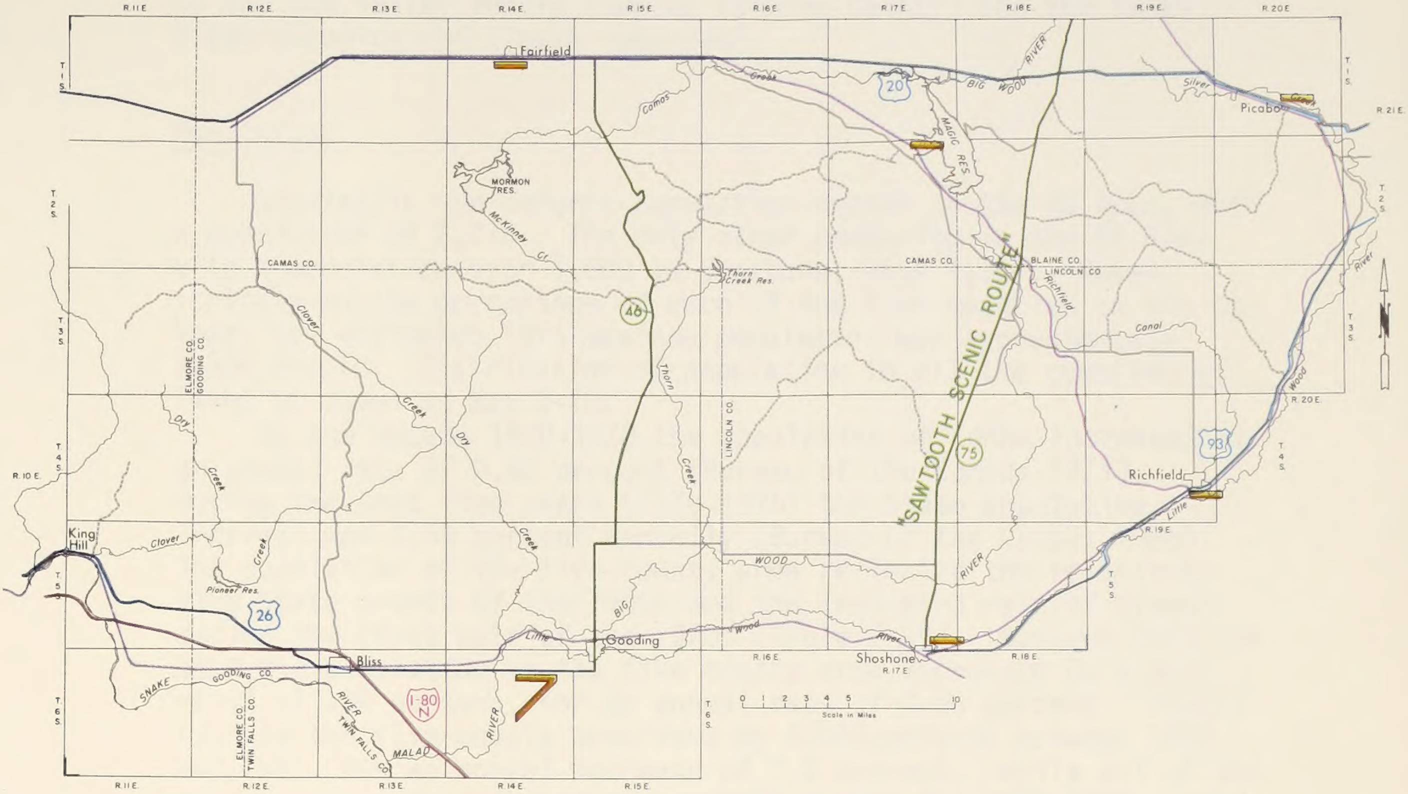
The Shoshone ES Area is comprised of portions of five south-central Idaho counties: Blaine, Camas, Elmore, Gooding, and Lincoln. Table 2-28 shows the percentage of each county within the ES Area.

TABLE 2-28

COUNTIES REPRESENTED IN ES AREA

COUNTY	ACREAGE IN ES AREA	PERCENTAGE OF COUNTY	PERCENTAGE OF ES AREA
Blaine	108,000	1	12
Camas	209,000	30	23
Elmore	97,000	1	10
Gooding	275,000	58	30
Lincoln	232,000	29	25
TOTAL	921,000	--	100

Source: BLM, Idaho State Office 1978



MAP 2–14

TRANSPORTATION NETWORK

LEGEND

— INTERSTATE FREEWAY

— FEDERAL HIGHWAY

— STATE HIGHWAY

— UNION PACIFIC RAILROAD

▬ LOCAL AIRPORTS OR AIRSTRIPS

These five rural counties (also referred to in this section as the economic study area) are economically dependent on agriculture and food processing. Recreation is an important component in the economy of the five-county area, due primarily to the presence of the Sun Valley resort complex (Blaine County) and the Snake River (Gooding and Elmore Counties).

Population

Gooding is the largest population center in the ES Area, with a population of 2,775. The only other community in the ES Area with a population over 1,000 is Shoshone, with 1,150. Based strictly on the percentage of each of the five counties in the ES Area, the estimated 1975 maximum population was approximately 9,500 people. Distribution of population in all the counties of Idaho is shown on Map 2-15.

In the decade 1960-1970 the population of Idaho increased at an annual rate of 0.66 percent (Bureau of the Census 1971). During the next five years (1970-1975) the State population increase was 2.69 percent annually (Bureau of the Census 1976). The population of the five-county area reflected the relatively slow State growth of the 1960s and the increased rate of growth during the first half of the 1970s (Table 2-29). Between 1960 and 1970 the population of the five county area increased by a net total of 194 persons, for an annual rate of 0.05 percent. Population in the five-county area rose by 6,080 persons between 1970 and 1975, for an annual increase of 3.2 percent. While all of the five counties experienced some growth during the 1970-1975 period, the greatest amount, both in numbers and percentage, occurred in Blaine County and seems directly attributable to growth in the Ketchum-Sun Valley Area (Table 2-29). During the early 1970s the general population growth in the five-county area can be explained by increased employment opportunities and a shift in the population from urban to rural areas.

Employment

The economy of the five-county area, and by extrapolation, the ES Area, is based on agriculture. The location quotients shown in Table 2-30 quantify each economic sector according to its degree of specialization *vis-a-vis* the same sector at the State level. A location quotient with a value greater than one indicates that the industry is more specialized in the five-county area than it is statewide. Conversely, if the value of the location quotient is less than one, it means that the industry is less specialized in the five-county area than statewide.

TABLE 2-29

POPULATION BY COUNTY AND CITY
1960-1975
ECONOMIC STUDY AREA

	1960	1970	Annaul % Change 1960-70	1975	Annual % Change 1970-75
Blaine County:	4,598	5,749	2.26	8,096	7.09
Bellevue	384	537	3.41	659	4,18
Hailey	1,185	1,425	1.86	1,979	6.79
Ketchum	746	1,454	6.90	2,698	13.16
Sun Valley	317	180	-5.50	239	5,83
Camas County:	917	728	-2.28	858	3.34
Fairfield	474	336	-3.38	400	3.55
Elmore County:	16,719	17,479	.45	18,962	1.64
Glenns Ferry	1,374	1,386	.09	1,449	.89
Mountain Home	5,984	6,451	.75	6,811	1.09
Mountain Home AFB	---	6,038	---	5,100*	-3.32
Gooding County:	9,544	8,645	- .98	10,458	3.88
Bliss	91	114	2.28	138	3.90
Gooding	2,750	2,599	- .56	2,835	1.75
Hagerman	430	436	.14	544	4.53
Wendell	1,232	1,122	- .93	1,492	5.87
Lincoln County:	3,686	3,057	-1.85	3,364	1.93
Dietrich	118	84	-3.34	77	-1.73
Richfield	329	290	-1.25	368	4.88
Shoshone	1,416	1,233	-1.37	1,183	- .82
Region	35,464	35,658	.05	41,738	3.20
State	667,191	712,567	.66	813,765	2,69

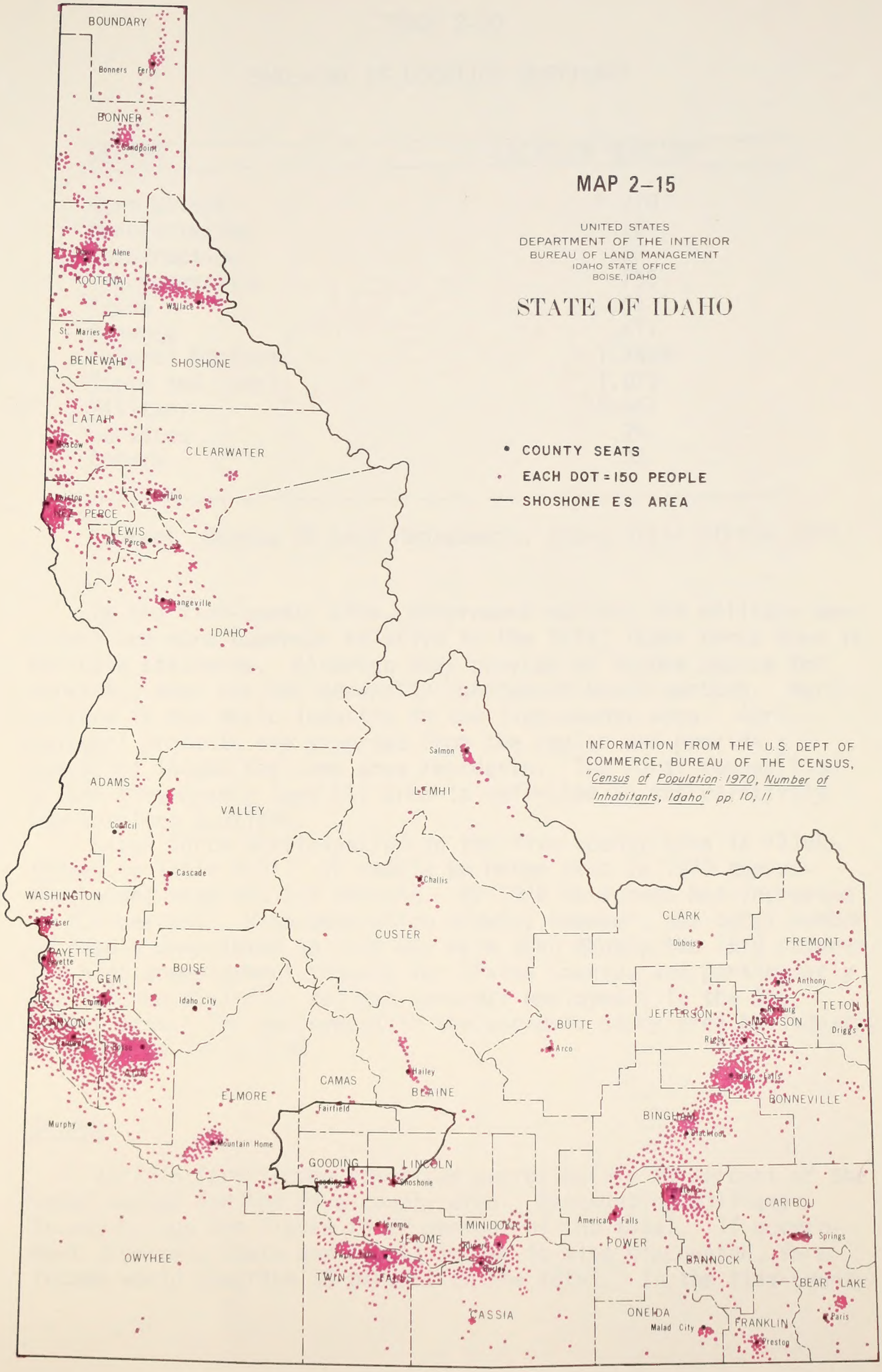
* Approximation from AFB Personnel.

Source: Population Estimates and Projections, Bureau of Census,
Series P-25, No. 660, April 1977
Number of Inhabitatns, Idaho, Bureau of Census

MAP 2–15

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
IDAHO STATE OFFICE
BOISE, IDAHO

STATE OF IDAHO



• COUNTY SEATS
• EACH DOT = 150 PEOPLE
— SHOSHONE E S AREA

INFORMATION FROM THE U.S. DEPT OF COMMERCE, BUREAU OF THE CENSUS, "*Census of Population: 1970, Number of Inhabitants, Idaho*" pp. 10, 11

STATE OF IDAHO POPULATION DENSITY

TABLE 2-30

SHOSHONE ES LOCATION QUOTIENTS

SECTOR	LOCATION QUOTIENT
Agriculture	1.210
Manufacturing	.16
Construction	.88
Transportation	.735
Trade	.64
Finance	.611
Federal Employee	1.7669
State and Local	1.079
Military	12.467
Services	.79
Others	.93

Source: Bureau of Land Management, Idaho State Office 1978

In the five-county area, government workers and military personnel are more numerous relative to the total labor force than is the case statewide. Although they provide an income source for services, they are not generally considered basic sectors. Agriculture is the basic industry in the five-county area. Agricultural products are exported from the region and provide a source of income for some area residents. The rural composition of the five-county (and ES) area is reflected in the relatively low services quotient.

Labor force participation in the five-county area is illustrated in Table 2-31. It should be noted that in 1970 the unemployment rate was 5.5 percent. By 1976 this rate had increased to 9.6 percent. With population growth, however, the total number of people unemployed in 1976 was more than double the 1970 figures. The high unemployment figures for Blaine County, and particularly the Ketchum division, reflect seasonal employment in the Sun Valley area. The employment in the economic study area by industry is shown in Table 2-32.

Income

In 1975 farm income comprised approximately 20 percent of the total income for the five-county area. Discounting military income brings the figure to 27 percent of the total. If government (Federal, State and local) income is also discounted, farm income would comprise 35 percent of the total. In the five-county

TABLE 2-31

ANNUAL AVERAGE EMPLOYMENT
1970 AND 1976
ECONOMIC STUDY AREA

	1970				1976			
	Labor Force	Unemployment	Rate	Employment	Labor Force	Unemployment	Rate	Employment
Blaine County:	3,082	293	9.5	2,789	5,343	770	14.4	4,573
*Bellevue-Carey div.	864	36	4.2	828	1,451	94	6.5	1,357
Hailey div.	816	28	3.4	788	1,366	73	5.3	1,293
Ketchum div.	1,402	229	16.3	1,173	2,526	603	23.9	1,923
Camas County:	434	21	4.8	413	449	47	10.5	402
*East Camas div.	67	0	0.0	67	65	0	0.0	65
*West Camas div.	346	0	0.0	346	337	0	0.0	337
Elmore County:	4,427	173	3.9	4,254	5,409	399	7.4	5,010
Atlanta div.	49	0	0.0	49	58	0	0.0	58
*Glenns Ferry div.	900	45	5.0	855	1,110	103	9.3	1,007
Mountain Home div.	3,478	128	3.7	3,350	4,241	296	7.0	3,945
Gooding County:	3,956	172	4.3	3,784	4,298	316	7.4	3,982
*Bliss div.	281	16	5.7	265	309	30	9.7	279
Gooding div.	1,970	90	4.6	1,880	2,144	165	7.7	1,979
Hagerman div.	457	19	4.2	438	496	35	7.1	461
Wendell Div.	1,247	47	3.8	1,200	1,349	86	6.4	1,263
Lincoln County:	1,366	77	5.6	1,289	1,187	67	5.6	1,120
*Richfield div.	234	0	0.0	234	203	0	0.0	203
*Shoshone div.	1,132	77	6.8	1,055	984	67	6.8	917
*Subdivision region	3,824	174	4.6	3,650	4,459	294	6.6	4,165
5-county region	13,265	736	5.5	12,529	16,686	1,599	9.6	15,087
State					391,566	26,333	6.7	365,233

Source: Unpublished data from Idaho State Department of Employment.

TABLE 2-32

EMPLOYMENT BY MAJOR INDUSTRY
1975
ECONOMIC STUDY AREA

MAJOR INDUSTRY	SIC	EMPLOYMENT	PERCENT DISTRIBUTION	ANNUAL RATE OF GROWTH FROM 1972
Agriculture	09	2,795	17.17	.18
Manufacturing	39	470	2.89	8.20
Construction	17	754	4.63	7.26
Transportation	49	688	4.23	4,55
Trade	59	2,464	15.14	7.67
Finance	62	390	2.39	7.04
Federal Employee	A92	1,064	6.54	2.78
State and Local	92	3,269	20.08	5.86
Military*	91	4,359	---	4,98
Services	89	2,123	13.04	6.65
Other Nonagricultural	XX	2,261	13.89	3,29
Total		20,637	100.00	4.74

* All military personnel are in Elmore County. Since the possibility of them being at Mountain Home Air Force Base is great, that figure has been eliminated from the percentage distribution.

Source: Population and Employment Forecast, State of Idaho, IDWR and BSU, July 1976.

area government was the largest individual income sector. This primarily reflects the presence of military personnel at Mountain Home Air Force Base, which is outside the ES Area, and the relatively large number of civilian government workers (Bureau of Economic Analysis 1976). In the private nonfarm sector the largest sources of income came from wholesale and retail trade. Table 2-33 sumarizes total personal income, livestock marketings, and farm income for the years 1970-1975. Table 2-34 shows the percentages of income by sector as well as county for the entire five-county area.

TABLE 2-33

PERSONAL INCOME
1970-75
SHOSHONE ES AREA

	TOTAL INCOME	REAL 1970 DOLLARS*	LIVESTOCK MARKETINGS	REAL 1970 MARKETINGS*	FARM INCOME	REAL 1970 FARM INCOME*
1970	119,498	119,498	41,354	41,354	16,486	16,486
1971	123,172	118,095	43,600	41,803	13,096	12,556
1972	143,471	133,165	57,194	53,086	14,797	13,734
1973	179,555	156,892	66,425	58,041	32,055	28,009
1974	216,664	170,603	53,744	43,219	50,100	39,449
1975	215,838	155,718	67,675	48,825	28,258	20,387
AVE.	166,366	142,328	54,998	47,721	25,798	21,770

*The numbers in these columns are in 1970 dollars; the effects of inflation have been removed.

Source: Department of Commerce, Bureau of Economic Analysis 1977 and BLM: Idaho State Office 1978

Livestock Operations

Table 2-35 shows that the cattle population decreased in two counties (Blaine and Elmore) and increased in three (Camas, Gooding, and Lincoln) during the five-year period 1969 to 1974. The five-county average cattle population was up about 1 percent in 1974 over the 1969 figure.

TABLE 2-34

PERSONAL INCOME BY MAJOR SOURCE
SHOSHONE ECONOMIC STUDY AREA
1975

COUNTY AND INFORMATION CATEGORY	MANU-FACTURING	MINING	CON-STRUCTION	WHOLESALE & RETAIL TRADE	FINANCE INSURANCE REAL EST.	TRANSPORTATION COMMUNICATION PUB. UTILITIES	SERVICES	OTHER INDUSTRIES	GOVERNMENT	TOTAL NON-FARM	TOTAL FARM	TOTAL
BLAINE COUNTY												
Dollars	2,244	(L)	2,999	6,461	2.002	1,160	10,721	329	5,042	31,000	1,829	32,829
Percent of County	6.34	(L)	9.14	19.68	6.10	3.53	32.66	1.00	15.36	94.43	5.57	100.00*
Percent of Study Area	(D)	(L)	(D)	34.25	42.66	(D)	65.55	(D)	6.69	22.57	5.25	19.06
CAMAS COUNTY												
Dollars	(D)	-	(D)	186	-	(D)	249	-	696	1,694	186	1,880
Percent of County	(D)	-	(D)	9.89	-	(D)	13.24	-	37.02	90.11	9.89	100.00*
Percent of Study Area	(D)	-	(D)	.99	-	(D)	1.52	-	.92	1.23	.53	1.09
ELMORE COUNTY												
Dollars	(D)	(L)	2,843	6,393	1,751	3,731	2,754	(D)	55,336	74,969	15,188	90,157
Percent of County	(D)	(L)	3.15	7.09	1,94	4.14	3.05	(D)	61.14	83.15	16.86	100.00*
Percent of Study Area	(D)	(L)	(D)	33.89	37.31	(D)	16.84	(D)	73.44	54.58	43.57	52.31
GOODING COUNTY												
Dollars	1,391	(D)	899	5,144	740	2,135	2,181	(D)	9,270	21,818	13,882	35,700
Percent of County	3.90	(D)	2.52	14.41	2.07	5.98	6.11	(D)	25.97	61.11	38.89	100.00*
Percent of Study Area	(D)	(D)	(D)	27.27	15.77	(D)	13.34	(D)	12.3	15.88	39.83	20.73
LINCOLN COUNTY												
Dollars	(D)	(D)	(D)	679	200	945	450	(D)	5,003	7,876	3,771	11,647
Percent of County	(D)	(D)	(D)	5.83	1.72	8.11	3.86	(D)	42.96	67.62	32.38	100.00*
Percent of Study Area	(D)	(D)	(D)	3.60	4.26	(D)	2.75	(D)	6.64	5.73	10.82	6.76
ECONOMIC STUDY AREA												
Dollars	(D)	(D)	(D)	18,863	4,693	(D)	16,355	(D)	75,347	137,357	34,856	172,213
Percent of Study Area	(D)	(D)	(D)	10.94	2.73	(D)	9,50	(D)	43.72	79.76	20.24	100.00*

* Percentages may not add to 100% due to rounding.

(L) Less than $50,000. Data are included in totals
(D) Not shown to avoid disclosure of confidential information. Data are shown in totals

Source: Personal Income by Major Sources, 1970-75; Regional Economics Information System, Bureau of Economic Analysis (BEA), 1977.

TABLE 2-35

LIVESTOCK CENSUS AND TREND 1/

TYPE OF LIVESTOCK AND COUNTY	REPORTING RANCHES		ANIMAL NUMBERS		PERCENT CHANGE 1969 TO 1974
	1969	1974	1969	1974	
Cattle and Calves					
Blaine	133	133	28,662	26,541	- 7.4%
Camas	61	53	11,523	13,206	+14.6%
Elmore	148	138	62,492	51,750	-17.1%
Gooding	553	520	67,760	78,283	+15.5%
Lincoln	235	228	28,574	31,389	+ 9.8%
Total	1,130	1,702	199,011	201,169	+ 1.0%
Sheep and Lambs					
Blaine	38	37	37,947	53,794	+41.7%
Camas	4	7	2/	2/	2/
Elmore	15	13	24.590	11,525	-53.1%
Gooding	42	31	21,502	24.573	+14.2%
Lincoln	26	35	15,966	8,202	-48.6%
Total	125	123	100,005	98,094	- 1.9%

1/ For farms with sales of $2,500 or more from 1969, Census of Agriculture.

2/ There are relatively few resident sheep in Camas County on a yearlong basis. Normally several thousand sheep trail through the county going to and from their summer ranges. However, these sheep are reflected in the Census figures for the other counties. The Census indicates there are some sheep sold in Camas County even though there are only a few resident sheep grown there.

TABLE 2-36

RECEIPTS, INCOME, AUMS
SHOSHONE ES AREA
1974

COUNTY	CASH RECEIPTS ($000s)	LIVESTOCK RECEIPTS ($000s)	LIVESTOCK RECEIPTS (Percent)	TOTAL FARM INCOME ($000s)	LIVESTOCK INCOME ($000s)	LIVESTOCK FORAGE (AUMs)	INCOME PER AUM (Dollars)
Blaine	11,819	6,346	53.69	3,469	1,918.9	447,598	4.29
Camas	6,233	1,694	27.18	1,920	537.7	192,574	2.79
Elmore	57,453	24,979	43.48	20,100	9,002.9	648,660	13.88
Gooding	46,712	15,794	33.81	20,880	7,273.1	998,371	7.28
Lincoln	19,670	4,931	25.07	9,699	2,504.9	396,353	6.32
TOTAL	141,887	53,744	37.88	56,068	21,237.5	2,683,556	7.91

Sources:
(1) BEA Farm Income and Expenditures, Regional Economics Information System, Bureau of Economic Analysis
(2) Personal Income by Major Sources, Regional Economics Information System, Bureau of Economic Analysis
(3) 1974 Census of Agriculture, Idaho, State and County Data; U. S. Department of Commerce; Bureau of the Census; May 1977
(4) Bureau of Land Management; Idaho State Office; Boise, Idaho; October 1978

During the same period sheep numbers decreased about 2 percent in the five-county area. However, large sheep population shifts occurred within the individual counties. The general decrease in sheep numbers is part of a regional trend. The difficulty in obtaining adequate labor, declining markets, and conversion from sheep to cattle have been the key factors contributing to a lower sheep population.

The Shoshone ES Area is characterized by a diverse mix of livestock operators. There are those who run cattle, those who run sheep, and some who run both. Among the cattlemen there are those who just sell calves, those who sell yearlings, and those who could be characterized as having a "vertically integrated" operation; that is, they not only sell calves and yearlings, but also dairy products and bull semen from registered herds. In addition, some ranchers merely trail their livestock through the ES Area on their way to National Forest land, some have their livestock spend a significant portion of the summer in the ES Area, and others have their livestock spend the entire summer in the ES Area. In terms of size, cattle operations range from 14 to 5,000 cows. Sheep operations range in size from 25 to 10,000 sheep.

The great diversity in the area prevents the analysis of ranchers by group because there would be 15 to 20 groups. Data and analysis are presented for operators in the ES Area as a whole and for the "average operator."

There are 112 ranchers utilizing BLM grazing permits who operate within the Shoshone ES Area. Of these, 102 raise at least some cattle. The average cattle herd size is 358. There are 17 ranchers (out of the 112) that raise sheep. These ranchers raise a total of 36,503 cattle and 54,000 sheep.

Total active AUMs in the ES Area are 83,120. The fewest number of active AUMs held by a rancher is 4 and the largest number is 8,329. The average number of active AUMs per rancher is 773.

The average number of AUMs actually used over the last five years is 58,731. The rancher with the lowest average use averaged 3 AUMs. The largest average was 6,023 AUMs. Among all 112 operators the average use was 560 AUMs.

In the economic study are (Blaine, Camas, Elmore, Gooding and Lincoln Counties) there are a total of 2.4 million cattle AUMs and 269,000 sheep AUMs on farms with sales of $2,500 and over (U.S. Dept. of Commerce). This represents total AUMs of 2.7 million and livestock income of $21.2 million, which is equivalent to $7.91 of farm income per AUM (Table 2-36).

Within the ES Area the dependency of individual operators on BLM AUMs varies widely. The highest dependency is 56.52 percent. This means that 56.5 percent of operator's total feed comes from BLM AUMs. The lowest dependency is .09 percent. The average dependency is 16.7 percent.

Of the 112 operators, 96 graze on BLM public land during the spring, from March 16 to June 15. Among these 96 operators the maximum number of spring days grazed is 92 and the minimum number of days is 26. The average number of spring days grazed is 60. Eighty-eight of the operators use public lands during the summer, from June 16 to August 31. The maximum days of summer use are 108 and the minimum is 10. The average number of days used in the summer is 62. In the fall, from September 1 to December 15, 23 operators utilize BLM lands. The maximum number of days of use is 76 while the minimum is 3 days. The average number of days of grazing on BLM land in the fall is 29 per operator. In the winter, from December 16 to March 15, only three operators graze on BLM lands. The average number of days these operators use BLM lands in the winter is 62 days.

Social Values and Attitudes

Seven of the 112 ranchers who graze livestock on public land in the Shoshone ES Area were interviewed for community values and attitudes. While this is not a statistically significant sample, it is considered to be representative of the ranchers in the ES Area because all types were interviewed: from first- to third-generation ranchers, ranchers under 30 to over the age of 65, and ranchers owning less than 100 to more than 500 head of livestock.

From the responses it appears that the "typical" rancher in the ES Area is approximately 52 years old, married, and his spouse is 51. They are of Euro-American descent and are not veterans. The rancher has approximately thirteen years of education and his spouse fourteen. They have approximately four children.

In the 1970s, with high expenses and low beef prices, ranchers have faced economic and social pressures which could bring about changes in the industry. Economists (Martin 1968, Shultz 1970) think that the livestock industry lags significantly behind other sectors of American agriculture in the areas of managerial efficiency and innovation acceptance. Ranchers, when contrasted to more progressive agriculturists, seem to make decisions based on non-economic motives, such as maintaining a way of life. High profit is not their primary goal (Schultz 1970). Perhaps maintaining the ranch as a way of life is more important than maximizing profits (Martin 1968).

Schultz found that 86 percent of his sample of western livestock operators viewed ranching as a way of life rather than a profit-making enterprise. Honesty, hospitality, and respect for the rights and privacy of others were qualities that ranchers ranked high. Only among the most progressive ranchers did managerial qualities rank high.

Among those ES Area ranchers interviewed, most are ranchers primarily because it is a way of life. One said he was a rancher because it was a way to make money and one said somebody had to do it (provide ranch products to the public).

The ranchers enjoy the variety of jobs involved in ranching primarily because they decide when and how to do things. One mentioned because it kept him healthy and physically fit, and one just liked ranching.

The ES Area ranchers surveyed thought that a man must possess certain qualities to be accepted by other ranchers. These included honesty, cooperation, and a willingness to take part in local affairs.

Studies in eastern Oregon and Washington have shown that both the nuclear and extended family play important roles as a labor-saving device and decision-making unit among cow-calf operators. Family relationships tend to be relatively stable and many ranchers utilize their children as a reserve or regular labor force. In many cases married offspring return to the ranch, establish residence patterns, and form an extended-family economic relationship. Often these relationships are later formalized as partnerships or family corporations. By incorporating family members, ranchers can obtain qualified labor and reduce operating costs.

Many ranch-youths, however, are unwilling to ranch as the principal way of earning a living. They desire opportunities with less risk and less initial capital investment. Some of these individuals leave the ranch and seek other means of employment.

Three of the ranchers interviewed in the ES Area are third-generation ranchers, three are second-generation, and one is a first-generation rancher. They have been ranching an average of 28 years. The responses ranged from 4 years to 46 years.

The respondents' children were either in college or too young to work on a ranch. One rancher was part of a family corporation in association with his father and he lived on the ranch. One rancher planned to take his sons into the business with him. Those ranchers who had children in college all said that their children had worked on the ranch during high school. To replace the lost labor many had hired part-time workers. Most of the grown children have moved away to pursue other careers. This may be explained by the ranchers' desire for a college education for their children, thus encouraging them to become interested in other fields and by the high costs of establishing a ranching unit. One young rancher in his early 30's explained that many of his friends would like to own a ranch but do not have the capital necessary for investment.

When they retire, most ranchers would like to maintain residence on the ranch. One rancher indicated he would travel and vacation and one said he would move to a local town. Six of the seven interviewed wanted their ranches inherited by a son or daughter when they retire and one said he would want it sold to another rancher.

Schultz (1970) found two groups of ranchers, the conservatives and the progressives. The conservatives generally had smaller, inefficient ranches with respect to production, faced serious problems with respect to resource utilization, and exhibited a strong desire to maintain the status quo. The progressive ranchers differed from the conservatives and had very different goals. This group was more interested in making a profit than in maintaining a way of life. Ranchers in the ES Area exhibit characteristics of both the conservatives and progressives, making it very difficult to assign individuals to either group.

Two-thirds of the progressive group in Schultz's study had taken one or more extension courses available in their area. Two areas of possible economic advantage may be realized by the progressives. First, increased social contact may allow one to utilize groups, associations, etc., which influence the livestock industry. Second, such increased participation may then lead to increased ranching information regarding livestock production trends.

When the ES Area ranchers were asked how much formal education is necessary for ranching today, the predominant answer was 13-16 years. In addition, they all wanted their children to have a college or university education. Most ranchers feel that the local extension services have been very helpful.

Of the seven ranchers, four had vocational agricultural education in high school. Of these four, the average number of years of vocational agricultural education was 2.75 years. Only three ranchers had nonuniversity training after high school.

Historically, the American cowboy has been characterized as a self-sufficient individual who preferred solitude and an isolated residence. By and large, he avoided social interaction. His interaction with urban dwellers was limited to essential activities, such as purchasing goods and selling stock. Schultz (1970) found that ranchers shunned memberships and participation in voluntary organizations. He concluded that many ranchers perceived few, if any, benefits from participation in formally structured social groups.

In the ES Area the ranchers do not tend to belong to veterans, social, fraternal, or civic organizations. However, they do belong to farm, trade, and religious organizations. The ranchers feel that the agricultural organizations have been very helpful to them but that the organizations have had only a somewhat helpful effect on improving the cattle market. They feel it is very important to be socially accepted in the local nonranching community and they all feel living in a rural area is superior to living in an urban area.

The ranchers interviewed all thought that ranching is becoming complex. The reason most often mentioned for this perception was government regulation. The ranchers did not favor government involvement in the ranching industry. Also mentioned were public attitudes toward ranching and livestock.

Ownership of natural resources was viewed as fundamental in securing and perpetuating the ranching lifestyle. The respondents were also opposed to the corporate production of beef because of (1) the negative connotation of the word "corporate" and (2) the perceived lack of commitment to "Western" values. Ranchers saw themselves as virtually the only remaining individuals whose industry still remains free of government control.

The ranchers interviewed in the ES Area owned an average of 690 acres of rangeland, 461 acres of irrigated cropland, and 36 acres of nonirrigated cropland. They use an average of 995 AUMs from the BLM, and 489 AUMs from the Forest Service. They lease an average of 867 acres from the State, 486 acres of rangeland from private sources, 26 acres of private irrigated cropland, and 143 acres of private nonirrigated cropland. Land is considered the most-limiting factor in expanding operations. Most ranchers sell their livestock at local auctions although contract selling to individual buyers is also common.

Regarding the general future of ranching in the next five years, two replied they were "favorable" about it, two were "somewhat favorable," two were "somewhat unfavorable," and one was "undecided." Regarding their specific future in ranching, four of the operators replied the same as in the general future, and three were more pessimistic. The four who replied the same to both questions were either "somewhat favorable" or "somewhat unfavorable" about the future of ranching.

Four of the ranchers were not looking forward to retiring at all. Two were partially looking forward to it, and one person was undecided. This indicates a relatively strong commitment to the ranching lifestyle.

- FUTURE ENVIRONMENT -

In most ESs this section is used to describe what the future environment would be, based on projected trends or changes, if the proposed project were not implemented. However, the future environment of the Shoshone ES Area has been evaluated, and no major trends or changes have been identified which would be entirely independent of livestock grazing. Since grazing has traditionally been a dominant use of the public lands within the ES Area, future grazing management would have a direct bearing on the future environment.

Unlike many Federal actions analyzed in other ESs, the proposed grazing management presented in this ES is not a completely new project, but rather is a modification of a long-standing and ongoing program. Therefore, the typically used phrase "without the proposed action" does not provide a definitive basis for description.

"Without the proposed action" has been interpreted to mean complete absence of livestock grazing (Natural Resource Defense Council, Inc., Personal Correspondence 1977). However, elimination of grazing would result in substantial changes in the human environment and would not provide a realistic basis for comparison. Conversely, "without the proposed action" could mean continuation of present grazing management. This approach has been used in most BLM grazing ESs to date. However, no change in grazing management would also be an unrealistic basis for predicting the future environment of the Shoshone ES Area. Considering the requirements of current BLM regulations, and the indication by recent inventories that some allotments are overstocked, a blanket continuation of present grazing would be unacceptable. In fact, the proposed action has been developed to correct or improve management which is considered inadequate.

Rather than select one of the above alternatives (or any other) as the sole basis for describing the future environment, both of these possibilities are presented in Chapter 8 in comparison with three other alternatives and the existing situation. In addition to describing each alternative and analyzing its impacts, a special effort has been made to describe the expected environment after fifteen years under each one.

CHAPTER 3

ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

This chapter identifies and analyzes the impacts that the Proposed Action (Chapter 1) is anticipated to have on the existing environment (Chapter 2). Analysis is limited to those resources expected to be significantly impacted by implementation of the Proposed Action. A cause-effect analysis is used in which each cause brought forth from Chapter 1 is tied to the various components of the environment as described in Chapter 2. The resultant impact (if any) is analyzed as to its beneficial or adverse effect on the environmental components.

Impacts will be assessed in both the short and long term. Unless otherwise stated in the narrative, short term means the five years during implementation of the Proposed Action, and long term means the following ten years or more after complete implementation.

The Proposed Action is predicted to have no significant impacts on climate, air quality, geology, minerals, or topography. Therefore, these will not be individually analyzed in this chapter.

ASSUMPTIONS AND ANALYSIS GUIDELINES

The following general assumptions have been made in the analysis of impacts of the Proposed Action on various environmental components. Specific assumptions for individual resources are included in the respective sections.

1. The Proposed Action would be implemented over the five-year period following completion and approval of the final environmental statement.
2. The BLM would fund the improvements required to implement the Proposed Action and do so within the stated time frame. Monies would not be solicited from users but would be accepted on a donation basis under cooperative agreements.
3. The necessary manpower would be furnished by and to the Shoshone District, and a vigorous effort would be made to completely carry out the studies and evaluation procedures recommended in Chapter 1.
4. Big game populations (antelope, deer, and elk) would be allowed to increase to meet the Bennett Hills and

Timmerman Hills MFP objectives and the specific allotment objectives identified in Chapter 1, Table 1-4. The forage necessary to sustain the additional big game animals would be available through improved vegetation conditions and increased production brought about by the proposed adjustments in livestock numbers, improved management practices, and rehabilitation projects.

5. The proposed range improvements would disturb approximately 6,109 acres over the short term (five-year period of implementation). Only 220 acres, which is less than 1 percent of the total, would be disturbed in the long term (ten-year period after full implementation) as a result of the physical presence of permanent improvements (see Table 3-1).
6. The proposed range improvements would cost approximately $665,000 to construct over a period of five years. They would cost approximately $30,000 per year to maintain thereafter. Certain maintenance functions would be provided by users under cooperative agreements.
7. In addition to maintaining proposed improvements, existing improvements would be maintained in serviceable condition.

Primary (direct) and secondary (indirect, usually off-site) impact analysis will be based on the following causal agents brought forth from the Proposed Action:

1. Forage allocation: adjustment of stocking rates to coincide with livestock grazing capacities and to provide for the needs of other resources such as watershed and wildlife.
2. Grazing systems: conversion to (or continuation of) rest rotation, modified rest rotation, deferred rotation, modified deferred rotation, deferred use, and annual spring grazing as defined in Chapter 1.
3. Range improvements: installation of water developments, construction of management facilities, and completion of land treatments.
4. Protection: elimination of livestock grazing, or continuation of no grazing, on unallotted areas.

TABLE 3-1

EXPECTED SHORT-TERM AND LONG-TERM DISTURBANCE FROM PROPOSED RANGE IMPROVEMENTS

PROPOSED RANGE IMPROVEMENTS	TOTAL UNITS	UNIT DESCRIPTION	SHORT-TERM DISTURBANCE PER UNIT (Acres)	SHORT-TERM DISTURBANCE TOTAL (Acres)	LONG-TERM DISTURBANCE PER UNIT (Acres)	LONG-TERM DISTURBANCE TOTAL (Acres)
WATER DEVELOPMENTS						
Water Wells	1.0	each	0.10	0,1	0.10	0,10
Storage Tanks	1.0	each	0.10	0.1	0,04	0.04
Pipelines	32.5	miles	1.50	48.8	2,10 1/	69.30 1/
Spring Development	16.0	each	0.01	0.2	2,01 1/	32.16 1/
Spring Maintenance	5.0	each	0.01	0.1	--	--
Reservoir Construction	24.0	each	1.15	27.6	2,70 1/	64.80 1/
Reservoir Maintenance	11,0	each	0.69	7.6	--	--
Subtotal Water Dev.				84,5	---	166.40
MANAGEMENT FACILITIES						
Fencing	117.5	miles	1.21	142,1	0,20	23,50
Cattleguards	20.0	each	0.01	0,2	0,01	0.20
Stock Trails	20.0	miles	1.50	30.0	1.50	30.00
Subtotal Mgmt. Fac.				172.3	--	53.70
LAND TREATMENTS						
Prescribed Burning (Without Seeding)	2,540	acres	1.00	2,540	--	--
Burning + Seeding	1,500	acres	1.00	1,500	--	--
Seeding Only	612	acres	1.00	612	--	--
Herbicide Spraying	1,200	acres	1.00	1,200	--	--
Subtotal Land Tr.				5,852	--	--
TOTAL - ALL TYPES OF IMPROVEMENTS				6,109		220

1/ Includes two-acre "sacrifice area", depleted of vegetation by livestock concentration.

IMPACTS ON SOILS

Implementation of the Proposed Action would result in an estimated future erosion rate for the entire ES Area of 0.95 acre feet/square mile/year (ac ft/sq mi/yr), which is considered high. This represents a 5 percent reduction from the present rate of erosion of 1.00 ac ft/sq mi/yr. Anticipated soil erosion rates were calculated using the Musgrave Equation (see Appendix 2) in conjunction with the estimated changes in vegetation production and their associated cover factors. Thirty-four allotments, totaling 439,375 acres, would experience an increase in production and cover (see "Impacts on Vegetation" section), which would result in increased soil productivity, less runoff, and less soil erosion. Three allotments in the ES Area, totaling 32,448 acres, would have low erosion rates; 20 allotments, totaling 165,007 acres, would have moderate erosion rates; and in 19 allotments, totaling 367,175 acres, the rates would be high (see Table 3-2).

Forage Allocation and Grazing Systems

Forage allocation and implementation of the grazing systems described in the Proposed Action would generally have a beneficial impact on the soils by improving cover, increasing soil productivity, and reducing erosion.

There would be an overall 35 percent downward adjustment in livestock grazing and at least 40 percent of all palatable forage and all unpalatable vegetation would be reserved for watershed protection and wildlife habitat. These two factors would lead to more beneficial impacts on the soil than would the implementation of the proposed grazing systems. At least 80 percent of the expected changes in cover, soil productivity, and erosion would be due to the proposed adjustments in stocking rates and allocation of forage (see Table 3-2) occurring in the short term. In the long term, soil conditions would continue to improve and erosion rates would decrease a total of five percent.

The effects of the proposed grazing systems on the soil are difficult to determine, but at most, 20 percent of the expected changes in cover, soil productivity and erosion would be attributable to the proposed grazing systems. Seven allotments totaling 33,639 acres would not be affected by implementation of the grazing systems.

Range Improvements

The kinds of range improvements affecting soils can be grouped into two categories: (1) water developments and management facilities, and (2) land treatments.

TABLE 3-2

EROSION RATES AND ASSOCIATED CHANGES IN GROUND COVER UNDER THE PROPOSED ACTION

ALLOTMENT NAME	PRESENT EROSION RATE 1/ (ac ft/ sq mi/yr)	CHANGE IN GROUND COVER 2/ SHORT TERM (Percent)	LONG TERM (Percent)	EXPECTED CONDITION IN 15 YEARS EROSION RATE (ac ft/sq mi/yr)	CHANGE FROM PRESENT (Percent)
Black Buttes	0.97	8	9	0.86	-11 3/
Black Canyon	0.95	5	7	0.88	-7
Canal	1.03	5	10	0.88	-15
Clover Creek	1.12	3	7	1.04	-7
Compound	0.97	7	8	0.88	-9
Cove Creek	0.94	14	15	0.81	-14
Davis Mountain	1.44	-2	-1	1.47	+2
Dempsey	1.13	7	11	1.01	-11
Fricke	0.41	7	8	0.37	-9
Gwin Ranch	1.86	-5	-5	1.99	+7
Hash Spring	0.78	0	1	0.76	-3
Hill City Branch	0.97	6	9	0.87	-10
Indian	1.05	8	10	0.95	-10
Kime	0.96	11	13	0.78	-19
King Hill	1.31	7	8	1.15	-12
Kinzie Butte	2.18	8	10	2.01	-8
Lava	0.32	9	12	0.24	-26
Lower Magic	1.32	12	17	1.06	-20
Macon Flat	0.44	6	7	0.40	-10
Magic	1.23	6	7	1.11	-10
North Gooding	0.84	-4	-5	0.91	+8
North Shoshone	1.08	5	7	1.00	-7
North Slope	1.51	3	3	1.43	-5
Picabo Cattle	1.42	7	8	1.32	-7
Pioneer	0.78	32	36	0.37	-52
Poison Creek	1.09	12	13	0.85	-22
Rattlesnake	1.23	8	10	1.09	-11
Richfield Cattle	0.85	0	0	0.85	0
Schooler Creek	0.67	-4	-1	0.68	+2
Spud Patch	1.97	1	1	1.93	-2
Spring Creek	0.66	-10	-10	0.73	+11
Springdale	0.23	-4	-3	0.24	+3
Struthers	1.14	4	5	1.08	-5
Swinging Bridge	1.13	0	0	1.13	0
The Pasture	0.38	3	4	0.36	-5
Ticeska	0.55	17	20	0.46	-17
Tikura	0.59	0	0	0.59	0
Timmerman East	0.81	-2	-3	0.85	+5
Timmerman West	1.22	-4	-5	1.32	+8
Track	1.32	8	9	1.20	-9
"46"	0.64	7	8	0.56	-13
"101"	0.31	9	11	0.28	-11
ES AREA AVERAGE	1.00	+4	+5	0.95	-5

1/ Erosion rates were calculated by the Musgrave Equation as explained in Appendix 2. The Sediment Yield Rating System (USDI, BLM 1978) defines erosion classes based on the erosion rate in acre feet per square mile per year (ac ft/sq mi/yr) as follows: 0 to .30 is low, .30 to .90 is moderate, and more than .90 is high.

2/ Change in ground cover is shown here because it is the main variable of the Musgrave Equation that will be affected by the Proposed Action. Short-term changes are due to the adjustment of stocking rates that would occur within five years. The long-term changes are due to the cumulative effects, in fifteen years, of the short-term changes and changes in grazing management, which include grazing systems, range improvements, and protection.

3/ A negative value indicates a decrease in erosion, a positive value indicates an increase in erosion.

Water Developments and Management Facilities

Generally, construction of all water developments and management facilities (affecting 257 acres, or less than .05 percent of the ES Area), would have a short-term adverse impact on soils due to a decrease in vegetative cover. Erosion rates would increase about 200 percent. Approximately 83 acres stripped of vegetation during construction would undergo an estimated 600 percent increase in erosion rates until reseeded areas reestablish (generally two years). In the long term, the adverse impacts would be reduced. Two hundred twenty acres would be disturbed in the long term as a result of the physical presence of permanent improvements and "sacrifice areas" depleted of vegetation by livestock concentration (see Table 3-1). About 178 acres (33 acres due to construction and 145 acres of "sacrifice areas") would have erosion rates seven times the present rate because of trampling, compaction, and/or lack of cover.

Land Treatments

The proposed land treatments on 5,852 acres would have adverse short-term impacts on soils that would decrease as revegetation proceeded. As noted in Table 3-1, 2,540 acres would be burned without seeding. In the short term this treatment would decrease the amount of cover, making the soils susceptible to wind and water erosion. On the 40 acres proposed for burning in the Hash Spring Allotment, erosion would increase 200 percent. On the 2,500 acres proposed for burning in the Lava Allotment, the increase would be 150 percent. These impacts would decrease as revegetation proceeded and would be negligible in the long term.

A 300 percent short-term increase in erosion would result from the proposed burning and seeding on 1,500 acres in the Lava Allotment. This impact would decrease over time and would be negligible in the long term.

As stated in Table 3-1, 612 acres are proposed to be seeded. The seedings are proposed in the Canal (112 acres) and Lava (500 acres) Allotments and, because they have similar soils, the impacts would be about the same. The seedings would be accomplished by either standard or deep-furrow rangeland drills, breaking up the surface soil during the treatment and subjecting them to increased wind and water erosion until the seeding became established. Erosion rates would be expected to increase about 150 percent in the short term. This impact would decrease over time and the long-term effects would be negligible.

Herbicide spraying is proposed on 1,200 acres and would have the same kinds of short-term adverse impacts as the prescribed burning but to a lesser degree. In the Kinzie Butte Allotment, 1,000 acres would be sprayed to decrease brush density, and an increase in erosion of 60 percent would be expected in the short term. Two hundred acres in the North Gooding Allotment would be treated to reduce the density of weeds. Erosion would increase by approximately 100 percent. In both allotments, the adverse impacts would decrease as revegetation by other species proceeded and would be negligible in the long term.

Protection of Areas From Livestock Grazing

Seventy tracts of public land totaling 9,518 acres have been identified as proposed unallotted areas (Map 1-1). Of these, 52 tracts, totaling 8,596 acres, would not be considered for livestock grazing but rather would be set aside for other purposes. Fourteen tracts totaling 625 acres would be incorporated into proposed allotments sometime within the 15-year life of the proposal. The remaining four tracts, totaling 297 acres, would be used as stock trails, stock driveways, and holding fields.

The 8,596 acres protected from livestock grazing would increase in production of vegetation and cover, which would result in less runoff and soil erosion. In the short term the effects would be minimal. However, in the long term soil conditions would improve and erosion rates would decrease by 16 percent as compared to the present situation.

The 625 acres proposed for inclusion into allotments sometime within 15 years would undergo changes similar to those described for the protected areas. However, the changes in soil condition and erosion rates would be less, depending on when the tracts were incorporated. Erosion rates would be expected to decrease by 5 to 16 percent from the present situation.

The 297 acres proposed for use as stock driveways, stock trails, and holding fields would decrease in production and cover, which would result in increased runoff and soil erosion. Assuming most of the vegetative cover would be removed in these areas because of trampling, competition, and overgrazing, erosion rates would increase about 500 percent.

Summary

Under the Proposed Action, the estimated future erosion rate for the ES Area would be 0.95 ac ft/sq mi/yr. This is a 5 percent decrease from the present rate.

Forage allocation and implementation of the grazing systems would have a beneficial impact on the soils by improving cover, increasing soil productivity, and reducing erosion. At least 80 percent of the decrease in erosion would be due to forage allocation and, at most, 20 percent would be due to implementation of the grazing systems.

Range improvements would have an overall long-term beneficial impact on soils by improving cattle distribution and vegetative cover. However, increases in erosion are expected in the short term on 6,109 acres.

Water developments and management facilities would increase erosion rates by 200 percent on 257 acres in the short term. In the long term, 178 acres would have erosion rates six times the present rate.

Proposed land treatments on 5,852 acres would increase erosion rates in the short term by 60 to 300 percent, depending on the kind of treatment and the soils. On 2,540 acres of prescribed burning, erosion rates would increase 150 percent. On 1,500 acres proposed for burning and seeding, erosion would increase 300 percent. Erosion would increase by 150 percent on 612 acres proposed for seeding only. The proposed herbicide spraying on 1,200 acres would increase erosion rates about 70 percent. Long-term impacts from land treatments would be negligible or slightly beneficial.

Erosion rates would decrease by 16 percent in the long term on 8,596 acres to be protected from grazing. Erosion rates would decrease by 5 to 16 percent on 625 acres proposed for inclusion into allotments sometime within 15 years. The remaining 297 acres of the unallotted areas proposed for use as stock trails, stock driveways, and holding fields, would undergo a 500 percent increase in erosion rates. These rates would continue in the long term.

IMPACTS ON WATER RESOURCES

Water Supply and Use

Under the Proposed Action, 24 new reservoirs would be constructed. This would increase the total water surface area with a resultant increase in evaporation of about 20 acre-feet per year. However, the Proposed Action would reduce livestock numbers and, consequently, reduce the water requirement to less than 80 acre-feet annually. Total water requirements for livestock and wildlife would not be expected to rise above 100 acre-feet annually. Because this figure is equal to the existing water requirements, no impact on surface or ground water supply would be expected as a result of implementation of the Proposed Action. Likewise, implementation of the Proposed Action would have very little impact on the surface-ground water relationship of the Upper Snake River Basin for the following reasons:

1. The ES Area receives little precipitation (less than 12 inches per year) and contributes less than 3 percent of the total water yield.

2. Few permanent streams originate in the ES Area. Only Clover Creek can be considered permanent and orginating entirely within the ES Area. Most water is transient, flowing through the ES Area.
3. Ground water resources are not extensively developed over most of the ES Area.

Surface runoff is primarily dependent upon rainfall intensity, the amount of water reaching the soil, and the amount of water that enters the soil. Basically, rainfall intensity and soil infiltration rates determine the net overland (surface) runoff. Livestock grazing can affect the infiltration rates of the soil through alteration of groundcover and compaction of soil (Branson, et al. 1978). Measurable changes in soil compaction would not be expected on 98 percent of the ES Area under the Proposed Action. Those areas presently being affected by compaction would continue to be affected in about the same manner and for the same reasons (i.e., adjacent to water, salting areas, livestock trailing areas). Unallotted areas (see Table 1-3 and Map 1-1) would show improvement from past effects of soil compaction, but this would be of little significance to the impact on total runoff because they represent only about 2 percent of the ES Area.

Many studies have shown that improved range conditions will generally increase soil infiltration rates, thus reducing runoff (Branson, et al. 1962; Hansen, et al. 1970; Rauzi 1956; Rauzi and Hanson 1966). An important factor controlling infiltration is the vegetation cover, which includes plant canopy, basal coverage, litter, etc. Many studies indicate that about 70 percent vegetation cover is the breaking point for minimizing surface water runoff (Packer 1953, Elwell and Stocking 1974). Below 65-70 percent vegetation cover, runoff effects by vegetation begin to decrease while soil factors dominate (EPA 1978). Unfortunately, "published evidence fails to show that any grazing system consistently increases plant and litter cover on watersheds" (Gifford and Hawkins 1976, p. 282). However, in order to assess hydrologic changes, an estimate of cover response is necessary. The overall increase of total cover (vegetation cover plus rock) would be less than 5 percent on all allotments. Only the Pioneer Allotment (6,762 acres), would be expected to have a vegetation cover greater than 70 percent. Eleven allotments (183,976 acres) would be expected to have total cover increased to greater than 70 percent. These include: Black Canyon, Canal, Clover Creek, Dempsey, Fricke, Hash Spring, Indian, Lower Magic, Pioneer, Rattlesnake, and Track. Seven allotments (Lava, Poison Creek, Springdale, Tikura, Timmerman East and West, and Track), totaling 75,832 acres, already have a total cover greater than 70 percent, and would be expected to maintain their condition. The remainder of the ES Area (304,822 acres) would have a total cover of less than 70 percent.

Eight allotments (Davis Mountain, Gwin Ranch, North Gooding, Schooler Creek, Spring Creek, Timmerman East and West, and Springdale), totaling 125,255 acres, would have small reductions in vegetation cover. These reductions would not affect runoff (see Table 3-3). Runoff will generally increase at a higher rate as percent vegetation cover decreases at a uniform rate, given equal storm intensities (adapted from Packer 1961). This supports the hypothesis that there is a level at which cover increases do little to reduce overland flow. Most of the ES Area would not reach that level.

Table 3-3 gives estimated changes in runoff by allotment and compares the predicted runoff to the present situation. Proposed allotments are presented for both present and future conditions to facilitate comparisons. Table 3-3 shows the return frequency (in years) of a 24-hour storm required to produce the same volume of surface runoff with implementation of the Proposed Action as produced by a 10-year, 24-hour storm under existing conditions. Averaged over the entire ES Area, a 13-year, 24-hour storm under the Proposed Action would be required to produce the same amount of water as a 10-year, 24-hour storm under existing conditions. This reduction in surface runoff would lessen the impact of flooding originating within the ES Area in the long term and could also reduce related impacts such as sedimentation. The overall regional impact of reduced surface water runoff is considered to be insignificant, because the ES Area comprises only about 3 percent of the upper Snake River basin.

Water Quality

Livestock grazing can have many impacts on water quality, including increases in organic matter, nutrients, bacteria, turbidity, sedimentation, and temperature. Since little quantification exists concerning the above water quality parameters within the ES Area, qualitative impact analysis was used.

The Proposed Action would eliminate cattle grazing on about seven miles of stream and ten miles of shoreline on various lakes and reservoirs that would be included in proposed unallotted areas (see Map 1-1). This would reduce the nutrient and bacterial problems generated by livestock. It is possible that bacteria levels would not measurably change (e.g., wildlife impacts could replace cattle impacts). In a study of three Northern Utah watersheds, Doty and Hookano (1971) found that fecal coliform bacteria can appear even in watersheds where there is no livestock grazing. Overall chemical and bacterial problems on the more important waters would remain substantially unchanged because livestock would continue to use unrestricted riparian (streamside) zones and agriculture, the major cause of water quality degradation in the ES Area, would not change significantly.

TABLE 3-3

PREDICTED CHANGES IN RUNOFF BY ALLOTMENT
UNDER THE PROPOSED ACTION

ALLOTMENT NAME	PUBLIC LANDS (Acres)	10-YEAR 24-HOUR PRICIP. 2/ (Inches)	DIRECT OVERLAND RUNOFF (Acre Feet/Square Mile) 1/			EQUALIZED RETURN PERIOD 3/ (Year)
			PRESENT	FUTURE	DIFFERENCE	
Black Buttes	49	1.7	<1	<1	0	13
Black Canyon	50,555	1.8	2	1	-1	15
Canal	511	1.7	2	<1	8	14
Clover Creek	42,435	1.7	3	2	1	15
Compound	457	1.7	6	3	3	16
Cove Creek	54	1.7	≤1	<1	0	10
Davis Mountain	39,030	1.7	<1	<1	0	16
Dempsey	20,014	1.7	6	5	-1	15
Fricke	87	1.7	≤1	≤1	0	10
Gwin Ranch	487	1.7	<1	<1	0	10
Hash Spring	5,746	1.9	6	5	-1	12
Hill City Branch	687	1.7	3	<1	-3	16
Indian	35,348	1.7	2	1	-1	10
Kime	600	1.7	9	7	-2	15
King Hill	25,368	1.7	7	3	-4	20
Kinzie Butte	8,684	1.7	6	2	-4	18
Lava	28,000	1.7	<1	<1	0	15
Lower Magic	263	1.7	12	8	-4	13
Macon Flat	38,982	1.9	<1	<1	0	17
Magic	6,052	1.7	10	7	-3	10
North Gooding	41,405	1.7	2	2	0	10
North Shoshone	93,628	1.7	<1	<1	0	10
North Slope	661	1.9	3	2	-1	15
Picabo	7,870	1.7	3	1	-2	16
Pioneer	6,762	1.7	1	<1	0	15
Poison Creek	269	1.9	4	3	0	12
Rattlesnake	20,281	1.7	8	4	-4	20
Richfield Cattle	22,015	1.7	2	2	0	10
Schooler Creek	58	1.9	7	7	0	10
Spud Patch	3,894	1.8	3	1	-2	16
Spring Creek	563	1.9	4	4	0	10
Springdale	310	1.9	6	6	0	10
Struthers	2,392	1.7	6	3	-3	17
Swinging Bridge	2,939	1.9	3	2	-1	17
The Pasture	918	1.7	<1	<1	0	10
Ticeska	3,891	1.7	<1	<1	0	10
Tikura	3,643	1.7	<1	<1	0	10
Timmerman East	28,952	1.7	2	1	-1	10
Timmerman West	14,450	1.7	2	1	-1	10
Track	1,974	1.7	3	2	-1	14
"46"	208	1.7	5	2	-3	15
"101	4,138	1.7	<1	<1	0	10

1/ Runoff for fifteen years after the proposed action is implemented was computed using Soil Conservation Service method as outlined in BLM Manual 7315. Cover values used in computation are from Table 1-**4**, Specific Objectives of the Proposed Action. Hydrologic Soil Groupings were estimated from Soils Descriptions in Chapter 2.

2/ Values represent the maximum 24-hour precipitation received during a 10-year period. Data is from Precipitation Frequency Isopluvial Maps, U.S. Dept. of Commerce

3/ The number represents the return period in years of the storm that would produce the equivalent direct runoff in the future as was produced by a 24-hour, 10-year storm under present conditions. Values greater than 10 would indicate an improvement in the hyrologic characteristics analyzed. Values less than or equal to 10 would show degradation or static conditions, respectively. Numbers represent rough estimates and are intended for general comparisons between allotments. Some reported "0" values in Column 5 show +10 values in Column 6. This is due mainly to acreage offsets or the acre-feet/square-mile value.

Sedimentation and siltation of stream bottoms would be the biggest livestock-related impact on water quality. Sedimentation is the action of depositing sediment or soil within a watercourse and siltation is the part of sedimentation that tends to fill the spaces between gravels and rocks in streams. Soil erosion and soil loss should not be confused with sedimentation. Soil erosion is an estimate of the relative mobility of soil particles and may or may not be directly related to sedimentation. The soil particles causing sedimentation can be supplied by various forms of soil erosion, only one of which is evaluated in the soils section. Once transported to a watercourse the soil may be transported further by streamflow or stored within the watercourse. The amount of soil transported is usually related directly to instream velocity and discharge, and these are poorly understood within the ES Area. Additionally, to establish the significance of a particular level of sedimentation it is necessary to relate the sedimentation levels to levels that are detrimental to a beneficial use. This type of information is not available in the ES Area and can only be obtained by field quantification and hydrologic modeling.

Soil erosion would be expected to be reduced an average of 5 percent over the ES Area with implementation of the Proposed Action (see "Impacts on Soils" section). This reduction would likely have some beneficial impacts to water quality in streams where adjacent public land ownership is high (King Hill Creek, E. Dempsey Creek, Hog Creek, and Dry Creek). Specific allotments and erosion rates are listed in Table 3-2. Allotments adjacent to perennial streams studied by Rabe, et al. (1976) are listed in Table 3-4 along with estimated overland erosion (soil loss) changes. As illustrated in Table 3-4, very little change in erosion would be evident on allotments containing important waters with the exception of 1.2 miles of Clover Creek in the Pioneer Allotment. By the time the predicted soil erosion arrived at the watercourse, it might be attenuated to such a degree that no difference would be seen between sedimentation in the existing environment and under the Proposed Action.

Overall sediment reductions cannot be related to beneficial use since quantifiable data is unavailable. The Proposed Action would reduce sedimentation, but this reduction might not significantly improve an associated use. Therefore, the significance of the reduction cannot be evaluated. At a "worst case" level, no change would occur.

In areas where sediment originates from stream channels, removal of livestock grazing can significantly improve overall channel stability, which should reduce sediment problems. Although the reduction cannot be directly quantified, only about nine percent of the fair and poor fisheries habitat would be expected to improve as a direct result of livestock exclusion (see "Impacts on Fisheries" section). The seven miles of Clover Creek proposed to be excluded from grazing would show local improvements in channel stability, but improving this small portion of the

TABLE 3 - 4

SOIL EROSION NEAR IMPORTANT WATERS

WATER	ALLOTMENT	PUBLIC LAND STREAM BANK MILES		TOTAL MILES OF STREAM 1/	OVERLAND EROSION (Acre Feet/Square Mile) 2/	
		Left Bank	Right Bank		PRESENT	PROPOSED ACTION
King Hill Creek	King Hill	11.9	0	14.4	1.31	1.15
Clover Creek	Fricke	.25	0	.25	0.41	.37
	Dempsey	1.2	0	1.5	1.13	1.01
	Pioneer	1.2	0	1.2	.78	.37
	Indian	1.0	1.0	1.0	1.05	.95
	Clover Creek	12.2	2.2	17.6	1.12	1.04
	Davis Mountain	0	9.0	12.2	1.44	1.47
Dry Creek	Black Canyon	9.2	9.2	10.4	.95	.88
Big Wood River (Below Richfield Diversion)	Lava	11.5	6.5	12.5	.32	.24
	Kinzie Butte	2.0	0	3.0 *	2.18	2.01
	Track	.5	.5	1.0 *	1.32	1.20
(At and Above Richfield Diversion)	Lower Magic	1.5	1.5	1.5	1.32	1.06
	Struthers	4.5	0	4.5	1.14	1.08
	Magic	0	3.25	3.25	1.23	1.11
(Above Reservoir)	Swinging Bridge	.6	0	.6	1.13	1.13
Camas Creek	Macon Flat	6.4	0	4.0	.44	.4
Silver Creek	Tikura	.5	.5	.5	0.59	0.59

1/ Includes State and private lands in addition to public lands.

2/ Erosion Data taken from soils information in Appendix.

* Asterisk (*) indicates a portion of the mileage is not included as fisheries habitat in Fisheries Section.

stream would not change overall sediment problems because there are other problems upstream. No significant in-channel sediment production would be expected to occur as a result of the Proposed Action because livestock would not have additional access to stream channels.

Impact Summary

No impact upon surface or ground water supply would be expected as a result of the Proposed Action.

Overall water quality problems would remain unchanged primarily because agricultural water quality degradation would continue. Associated problems from livestock would continue near present levels except where livestock are excluded from the riparian (streamside) zones.

Direct livestock induced sedimentation from streambank erosion would continue at present levels on areas with unrestricted livestock access (about 26 miles). Overall sedimentation would continue near present levels because little change is expected in soil loss and runoff.

No adverse impacts to the existing condition of water resources would be expected as a result of the Proposed Action.

IMPACTS ON VEGETATION

The Proposed Action includes four principal impact cause agents. They are adjustment of stocking rate (forage allocation), implementation of grazing systems, construction of range improvements, and protection from grazing (unallotted areas). The short- and long-term impacts of each cause agent are identified. The effects of combining forage allocation, grazing systems, range improvements, and unallotted areas are identified in the "Summary" section.

Proposed Allotments

The Proposed Action would establish 42 grazing allotments from the existing 53 allotments (Map 1-1). These allotments would include 564,630 acres of public land, over 98 percent of the total public land in the ES Area. The rest of the public land is proposed to be unallotted and is discussed later in this section.

Forage Allocation

The Proposed Action calls for an overall downward adjustment of 35 percent in actual livestock grazing use in the ES Area. Table 1-6 shows the proposed adjustment for each allotment, which ranges from 77 percent downward to 320 percent upward, as well as the overall adjustment.

Table 3-15 (see "Impacts on Livestock Grazing" section) groups the allotments into categories by degree of adjustment in stocking rate and shows the acreages involved.

A downward adjustment of 1-20 percent is proposed for 7,537 acres (approximately 1 percent of the total); an adjustment of 21-40 percent is proposed for 105,569 acres (19 percent of the total); an adjustment of 41-60 percent is proposed for 210,998 acres (37 percent of the total); an adjustment of 61-77 percent is proposed for 84,302 acres (15 percent of the total). A downward adjustment in stocking rate would, therefore, occur on 408,406 acres of public land (72 percent of the total).

An upward adjustment in stocking rate of 1-20 percent is proposed for 64,042 acres (11 percent of the total); an adjustment of 21-60 percent is proposed for 70,357 acres (13 percent of the total); an upward adjustment of 61-320 percent is proposed for 15,516 acres (3 percent of the total).

No change in stocking rate is proposed for 5,746 acres (1 percent of the total).

The downward adjustment from 58,731 AUMs annual use (five-year average, 1972-1976) to 38,138 AUMs annual use (proposed initial stocking rate) would result in an immediate beneficial effect on the overall vegetation resource by reducing the amount of herbage consumed by livestock. Consumption would decrease from 46,984,800 to 30,510,400 pounds annually, leaving 16,474,400 pounds more vegetation on the land.

Yearly plant growth not removed from the environment through grazing or wildfire becomes litter. Some plant residues, such as dead woody stems, remain in place for many years under semi-arid conditions; these are called persistent litter. Other residues, such as fine grass and forb leaves, decompose rapidly through weathering and disappear within a year; these are called non-persistent litter. Presently this litter, a natural part of the wildland vegetation, is being partially harvested by livestock.

Under present stocking levels approximately 11.7 percent of total vegetation production is being consumed as forage by livestock. Under the proposed stocking rate that consumption would decrease to 7.6 percent (Table 2-11).

The impact of leaving more herbaceous (nonwoody) plant material is expected to be much greater than that implied by the small percentage decrease of total production harvested by livestock. Presently an estimated 66,040,000 pounds of palatable grasses and forbs are being produced annually on public lands in the ES Area. Of that total, 46,984,800 pounds (71 percent) are presently being harvested by livestock. Under the proposed initial stocking rate, 30,510,400 pounds (46 percent) would be harvested. Herbaceous vegetation is especially important as litter as it helps form a mat or "thatch" to protect the soil from wind and/or water erosion.

Root channels of grasses and forbs allow water from melting winter snow or summer thunder showers to infiltrate rapidly into the ground. Perennial grasses, especially, have fibrous root systems of which part dies each year and decomposes, forming root channels while new roots grow. Decomposed plant parts can be considered underground litter. Fibrous roots of perennial forbs act in a similar way to perennial grass roots. Annual grass and forb roots decompose after completing their yearly life cycle. The woody roots of unpalatable shrubs do not form the number of root channels that grasses and forbs do. Water from melting winter snow or summer thunder showers normally flows around shrubs infiltrating into the soil at a slower rate than when many grasses and forbs are present. Because the water does not move into the soil it moves over the soil surface causing soil erosion.

Increased herbaceous litter accumulation would also improve the growing environment in several ways. First, litter would trap blowing snow and help water penetrate into the soil, making more moisture available for plant growth. Second, litter would shade the soil surface and reduce the amount of soil moisture lost through evaporation. Third, litter would increase soil-nutrient recycling. Plant growth removes important mineral elements from the soil. When plant litter is removed by grazing, these elements are lost, but when litter accumulates, these growth elements eventually return to the soil through decomposition. Fourth, since litter returns organic matter to the soil, it would improve the soil by making it more fertile and productive and by giving it greater moisture-holding capacity.

It should be noted that more litter would increase the danger of wildfire. However, fire is a natural part of the environment and often occurred unchecked before the white man arrived. Vigorous plants with hardy root systems would be able to reestablish after wildfire.

Improved vigor of forage plants would be expected from reduced grazing with the proposed initial stocking rate. Considered alone, adjustment in the initial stocking rate would lessen the grazing pressure on less desirable areas (e.g., slopes above 20 percent and areas greater than one mile from water). However, grazing pressure would remain relatively uniform within the areas grazed. The lower number of livestock would simply remain in the desirable grazing areas for a longer period of time and would not be forced to utilize the less desirable areas (Hormay 1970). The grazing systems proposed would reduce this effect (see "Grazing Systems" in this section).

Range Improvements

The Proposed Action includes construction and/or maintenance of several kinds of range improvements considered essential to implement the proposed grazing systems. The proposed improvements are grouped into three broad categories: water developments, management facilities, and land treatments. See Table 3-1 for the kinds and amounts of range improvements in each category and the quantified short- and long-term expected disturbance from the construction and physical presence of these improvements.

The construction phase of the proposed water developments and management facilities would temporarily remove approximately 257 acres of existing vegetation from production. Beyond the construction phase the improvements would permanently remove approximately 220 acres from production. The expected recovery period after construction (including seeding the disturbed area) is two to five years. Seeding disturbed sites is proposed to restore vegetation productivity and avoid infestations of the poisonous plant halogeton and the noxious weeds burr cuttercup, diffuse knapweed, and medusahead wildrye (see Tables 2-16 and 2-17).

Water Developments. Long-term impacts created by developing dependable watering places include removal of vegetation, changes in species composition, and decrease in plant vigor. Use of the developments by livestock (both cattle and sheep) would result in nearly complete removal of vegetation in the immediate area of the water source. This area, a circle roughly 30 to 100 yards in radius, is commonly called a "sacrifice area." Sacrifice areas would be located at spring troughs, well and pipeline troughs, and around reservoirs. The total disturbed area would be about two acres per water development. The vegetation would be removed mainly by trampling and forage consumption by livestock and wildlife. These areas would become mostly devoid of vegetation and would remain in the highly disturbed condition as long as continual use of the water source were made. There would be a decrease in the vigor of the plant species immediately beyond the sacrifice area. The vigor decrease would result from the trampling of vegetation by livestock, the heavy grazing which commonly takes place around water sources, and the "dusting over" effect of concentrated livestock, which in dry weather deposits a heavy layer of dust on plant tissue, thus interfering with normal plant function. The amount of damage and utilization inflicted upon the vegetation would decrease rapidly as the distance from the water source increased.

The establishment of new sheep bed grounds near newly developed dependable water would likely occur. Areas favored as sheep bed grounds are those with dependable water and some protection from adverse weather. Normally, a favorite bed ground is used several times during the year by several bands. Usually, each band is comprised of approximately 1,000 ewes with lambs. Bed grounds often become "sacrifice areas."

Too intense grazing would be marked by the disappearance of preferred forage plants or of those less resistant to grazing. Less-preferred or more-resistant plants would survive and replace those removed. This would eventually lead to a change in composition. Continued grazing would cause an influx of species called "invaders," which are not part of the climax. The initial invaders would be mobile annuals, but later the invasion of herbaceous or woody perennials of low value would take place (Stoddart, Smith, and Box 1975).

Removal of the existing vegetation provides an opportunity for other plants to begin growth. The use of the various proposed water developments may cause enough disturbance to permit increased numbers of poisonous plants or noxious weeds to invade the site.

However, the development of dependable water as proposed would have beneficial impacts which would counteract the adverse impacts discussed. Dependable water located at key points throughout an allotment or pasture would improve the distribution of livestock, thus promoting a more even utilization of the total vegetation resource. Proper utilization of forage is important in maintaining or improving the vegetation vigor, production, and condition. The proposed water developments, combined with the proposed grazing systems, would "pull" the livestock from the overused existing water sources, thereby allowing these areas to improve in vigor and production.

Management Facilities. Management facilities, i.e., fences, cattleguards, and stock trails, would cause adverse and beneficial impacts to vegetation. The impacts relate to both the actual ground space occupied by the improvements and the effect(s) the improvements have on the behavior and movement of domestic grazing animals.

Sheep are normally herded, so their behavior and movement would be more a function of the herder's actions than of the physical presence of the proposed management facilities. However, sheep use of the proposed North Gooding Allotment stock trail would impact vegetation that is presently very lightly used. New sheep bed grounds are also expected along this trail. The introduction of some noxious weeds, and possibly the poisonous plant halogeton, would probably occur along this proposed vehicle (horse-drawn sheep wagons) access trail.

The behavior and movement of animals other than cattle is not expected to change appreciably from the present situation as a direct result of the presence of management facilities. Cattle, however, normally do respond to the physical presence of facilities.

Fences are beneficial in managing cattle, but cattle tend to trail along fence lines. Therefore, a narrow trail near the fence could be completely denuded of vegetaion through trampling and soil compaction. In addition, a decrease in plant vigor and a change in species composition would occur in the immediate vicinity of the fence. Overgrazing would cause a decrease in preferred plant species with an increase in less preferred species.

The beneficial impacts from management facilities outweigh the adverse impacts. Fences, cattleguards, and stock trails are essential to the grazing systems in the proposed action. Even though the vegetation on small areas would be adversely affected, overall, the vegetation would benefit from installing the proposed facilities.

Land Treatments. The land treatments proposed include broadleaf herbicide spraying for the control of brush and weeds, prescribed burning to control brush, and seeding grass species. Predicted increases in production resulting from various land treatments are all based on results of similar kinds of projects already completed on the same ecological sites in nearby allotments.

The proposed application of broadleaf herbicide to 1,000 acres in the Kinzie Butte Allotment is for the purpose of brush control. The short-term (five year) impact of reduced brush and forb species would be offset by the short-term increase in perennial grass production. The long-term (fifteen year) benefit would be an increase from approximately 75 pounds per acre of forage yearly to approximately 110 pounds per acre yearly. Vegetation condition would change from poor to brush control (a man-caused category).

The proposed application of herbicide to 200 acres in the North Gooding Allotment is to control noxious weeds along sheep migration routes, around bedding areas, and near watering places. The short-term impact would be to remove all broadleaf plants (both undesirable and desirable) from the treated area. Both annual and perennial grasses would increase in the short term. The long-term benefit would be a lessened amount of noxious weeds and greater proportionate amounts of perennial grasses, forbs, and shrubs on the treated sites. The improved condition would be maintained by the proposed grazing management system.

Prescribed burning would have the short-term impact of completely removing vegetation until the following growing season on 4,000 acres in the Lava Allotment. Seeding crested wheatgrass following the prescribed burn on 1,500 acres in this allotment would have the long-term impact of changing species composition from a high percentage of shrubs and annual grass to a high percentage of perennial grass with some mixed annual and perennial forbs and a low percentage of shrubs. The expected long-term benefit would be an increase in forage productivity from 35 pounds per acre to 152 pounds per acre. On the remaining 2,500 acres receiving prescribed burning in this allotment, species composition would change toward more native grasses and forbs with only a small amount of shrubs over the long term. A long-term change in forage productivity from 35 pounds per acre to 128 pounds per acre would be expected on the area proposed to be burned without seeding.

Prescribed burning of 40 acres in the Hash Spring Allotment for sheep trail access would denude the cover of vegetation on sloping land until the following growing season. The short-term impact could also include some soil movement if the first spring snowmelt were especially rapid. Under normal circumstances moisture infiltration would be rapid, as the target species, Mountain big sagebrush, grows on well-drained soils. The proposed burn area is in high-fair to good vegetation condition with a wide variety of understory species. The long-term impact would be increased grass and forb composition with shrub species greatly reduced. The treated area would receive some additional forage use from sheep passing through, but this would be expected to be offset by improved moisture availability, reduced brush competition, and more growing space for grasses and forbs. If the treated area became attractive to the existing elk herd, an overgrazed condition could result, especially in the first spring when the first succulent shoots emerge.

The proposed seeding of 112 acres in the Canal Allotment by direct drilling into the existing vegetation would have a short-term impact of reduced grass, forb, and shrub production from disturbance by a tractor and rangeland drill. The long-term impact would be a substantial increase in grasses, some increase in forbs, and a reduction in the shrubs. The vegetation condition class would change from poor to seeding (a man-caused category). Forage production would increase from 50 pounds per acre to 200 pounds per acre.

In addition to the 1,500 acres to be seeded following prescribed burning, another 500 acres in the Lava Allotment would be seeded by direct drilling into the existing vegetation. In this case, the short-term impacts and long-term vegetation composition and condition impacts would be identical to those described above for the Canal Allotment. Production would be expected to increase from 35 pounds of allocable forage per acre to 152 pounds per acre.

Grazing Systems

From the standpoint of vegetation response, the most important features of the Proposed Action are the implementation of grazing management systems together with the proposed forage allocation.

The proposed grazing systems are discussed in Chapter 1 under "Grazing Systems." The kind of grazing system(s) proposed for each allotment and the general proposed season(s) of use are shown in Table 1-2. A detailed breakdown of the proposed grazing systems by allotment or portion thereof and the rationale for selecting the systems are shown on Table 1-7.

The analysis of grazing system impacts on vegetation moves from the general to the specific. First, general principles of vegetation resonse are reviewed. Next, vegetation response during specific grazing use periods for the ES Area is discussed. Finally, the expected vegetation response to the proposed grazing systems is analyzed.

Vegetation Response to Season of Grazing Use. Impacts to vegetation caused by grazing vary according to the vegetation stage of growth or dormancy. Defoliation (grazing) of plants during susceptible periods can reduce the ability of plants to maintain growth and vigor (Buwai and Trlica 1977). The time of defoliation is very important in determining the ability of the plant to recover.

Grazing any time during the green period of plants reduces the amount of food made and stored by them. This reduction, in turn, decreases the plant's capability to produce both shoot and root growth during the following growing season (Hormay 1970). This green period, which varies from plant species to plant species, begins in mid-April and continues into late August in the ES Area.

There is general agreement among research scientists that the most critical time in the growth cycle of most perennial forage grasses is the period between rapid spring growth and maturity (shortly after the time of seed ripening). Hormay (1970) indicates that defoliation is most harmful when food reserves are lowest. This occurs in the spring or early summer when the plant is most rapidly growing or any time until food storage is completed. Using fall levels of carbohydrates (food reserves) as an index to determine the severity of defoliation, Cook, et al. (1971) found that these reserves were at their lowest following defoliation during rapid growth about May 1, or at maturity, about July 1. Approximately 75 percent of these reserves are used in the spring to produce some 10 percent of herbage growth (Stoddart and Smith 1955). McCarty and Price (1942) identified two critical periods in the growth of forage grasses. They are the period of active reproduction, from flower-stalk formation to and including seed ripening, and the forepart of the normal carbohydrate-storage period. The most detrimental time of defoliation is during active growth when carbohydrate reserves are being used to produce herbage (Buwai and Trlica 1977).

There is also widespread agreement among research scientists with regard to browse plants (shrubs). Continual heavy spring browsing (grazing shrubs) severely depletes the plant's reserves, reproductive growth, and vigor; it eventually causes the death of the plant. Garrison (1972) found that while removal of the terminal bud will activate the lateral dormant buds, this vegetation growth is detrimental to flower and fruit production. Therefore, a decrease in the amount of viable seed occurs, resulting in fewer new plants in the future. Garrison also states that "late spring and middle of the growing season... are the most damaging periods of use" (Garrison 1972, p. 278). Trlica and Cook (1971) found that most shrub species defoliated by clipping about May 10 or July 1 had significantly smaller food reserves by the fall season than unclipped plants. Defoliation on approximately April 1 had less impact on food reserves than the May or July defoliation. Stoddart and Smith (1955) noted that browse plants completely defoliated three or four times in a season are readily killed and that removal of only half of the foliage markedly weakens the plant.

Fall and winter (dormant seasons) are considered to be the least harmful periods for grazing by most research scientists. Garrison (1972) found that fall and winter use of selected species is the least damaging to the plant's food reserves. Defoliation of 50 to 60 percent of a current year's growth is less harmful during the fall, early or late winter, or early spring than during late spring or early summer (Cook, et al. 1971).

Vegetation Response to ES Area Grazing Use Periods. A study of the phenological (life cycle) events of important range plants was made in 1976 for the Shoshone District. The plant species identified for the specific objectives (Table 1-4) are listed in Table 3-5 with four important phenological events: start growth, peak of flowering, seed ripe time, and date of seed dissemination (shattering of seed heads).

TABLE 3 - 5

MAJOR PHENOLOGICAL (LIFE CYCLE) STAGES 1/
OF KEY FORAGE PLANT SPECIES 2/
FOUND IN THE SHOSHONE ES AREA

PLANT SPECIES	START GROWTH DATE	PEAK OF FLOWERING DATE	SEED RIPE DATE	SEED DISSEMINATE DATE
GRASSES				
Crested wheatgrass	3/15-3/30	6/15-7/5	7/20-8/1	7/30-8/10
Bluebunch wheatgrass	3/30-4/15	6/10-7/10	7/10-7/30	7/20-8/5
Idaho fescue	4/15-4/20	6/30-7/5	7/20-7/30	7/25-7/30
Prairie junegrass	3/20-3/30	7/3-7/7	7/25-7/30	7/28-8/2
Nevada bluegrass	3/20-3/30	6/20-7/5	7/10-7/15	7/15-8/5
Sandberg bluegrass	3/1-3/20	5/5-6/10	6/5-7/10	6/10-7/15
Bottlebrush squirreltail	3/10-3/30	6/5-6/20	7/1-7/25	7/5-7/20
Western needlegrass	4/5-4/15	6/10-6/20	6/25-7/15	7/10-7/20
Thurber needlegrass	3/1-4/10	6/1-6/20	6/20-7/10	7/1-7/10
FORBS				
Agoseris	4/5-4/15	6/15-6/25	6/20-7/5	6/25-7/5
Tapertip hawksbeard	4/5-4/15	5/25-6/5	6/25-7/20	6/25-7/20
Butterweed groundsel	3/30-4/15	5/25-6/5	6/10-6/20	6/10-6/25
SHRUBS				
Antelope bitterbrush	4/5-4/20	6/5-6/30	7/10-7/25	7/20-7/30

1/ Phenological stages refer to specific development stages in plants
2/ Key plant species are the species used in the specific objectives (Table 1-4)

Data Source: Phenology study of Principal Forage Species in the Shoshone ES Area, 1976

To analyze the effect of grazing on the vegetation resource, specific grazing use periods were identified. These use periods correspond to principal phenological events for the key forage species (shown in Table 3-5); they also coincide with existing and proposed general season of livestock use in the ES Area. The use periods are listed in Table 3-6 along with calendar dates, phenological occurrences, and the physiological (plant life processes) reaction to defoliation (grazing) during specific use periods.

TABLE 3- 6

GRAZING USE PERIODS AND IMPORTANT
PHENOLOGICAL (LIFE CYCLE) EVENTS IN
RELATION TO DEFOLIATION (GRAZING)
SPECIFIC TO THE SHOSHONE ES AREA

GRAZING USE PERIOD DESCRIPTION	CALENDAR DATES	IMPORTANT PHENOLOGICAL AND PHYSIOLOGICAL (PLANT FUNCTIONS) OCCURRENCES, PERENNIAL FORAGE GRASSES	
		WITHOUT DEFOLIATION (RESTED OR DEFERRED FROM GRAZING)	WITH DEFOLIATION 1/ (GRAZED ONLY DURING THIS PERIOD) 2/
Early Spring	3/16 to 4/30	Begin growth, but prior to most rapid growth; both roots and shoots elongate; adequate root reserves remain through the period.	Still adequate root reserves are used up more rapidly by replacing shoots lost by grazing; root growth slightly reduced; normally regrowth occurs but quantity of herbage is somewhat reduced.
Late Spring	5/01 to 6/15	Period of most rapid root and shoot elongation; reedstalks form and emerge; root reserves are very low; plant is depending on its food production from green tissue; end of period is very close to "Peak of Flowering" (6/20).	Root and shoot growth greatly reduced by defoliation; less robust root system renders plant less able to extract soil moisture; herbage production is reduced; seed stalks consummed in the "boot stage" 3/ or while they are succulent after emergence reduces reproductive success.
Early Summer	6/16 to 7/15	Peak of reproductive cycle; "Peak of Flowering" (6/20) occurs early in the period; root reserves are low at beginning of period but are slowly building toward the end; much manufactured food going into seeds; plant may begin to experience some moisture-stress during hot days from depleted soil moisture.	Root and shoot growth are reduced by defoliation, the magnitude being greater near the beginning of the period than near the end; reproductive success may be greatly reduced; weakened root system causes considerable moisture-stress during hot days; defoliation reduces rate of root reserve storage because manufactured food is used in plant maintenance.
Late Summer	7/16 to 8/31	"Seed Ripe" period occurs near the beginning of the period; "Seed Shatter" occurs shortly after; root reserves build rapidly in late July and early August; moisture-stress induced dormancy occurs by mid to late August.	The effect of defoliation is greatly reduced; some reduction in root reserves may occur during the early part of the period; after dormancy there is little effect on the plant; grazing during this period is very beneficial as mature seed is dislodged and much more is trampled into the soil (planted) than under natural ungrazed conditions.
Early Fall	9/01 to 10/31	Moisture-stress induced dormant period; fall "green-up" may occur if September rains provide adequate moisture, thus slightly reducing root reserves; normally fall green-up occurs only about once in three years.	Defoliation does not significantly affect the plant except when fall green-up has occurred; when that happens root reserves are slightly reduced without the benefit of the green tissue being ready to manufacture food the following spring; deferring livestock use until this time is much less beneficial from a seed trampling standpoint than immediately after seed ripe; for some species that retain their seed, there is some effective planting.
Late Fall	11/01 to 12/15	Temperature induced dormant period; standing dead material helps insulate the plant from cold and creates a microclimate to improve moisture efficiency by shading the soil and trapping blowing snow around the plant	Defoliation during this period is generally not harmful to the plant; the effect of standing dead material on improved microclimate for moisture efficiency is reduced somewhat; Sauer (1978) found that bluebunch wheatgrass had less green material and shorter leaves but did not suffer in height or number of seed stalks or seed head length, as measured the following June 15, when defoliation of standing dead material occurred during winter dormancy.
Winter	12/16 to 3/15		

1/ Assume moderate grazing. Assume also that the plants are reasonably vigorous. If plants are very vigorous the results are minimized. If plants are very weak death may occur from grazing at any green stage.

2/ In order to make description meaningful, grazing only during the specified period is assumed because the effects of grazing are cumulative. Thus if a plant is defoliated during early spring, late spring, and early summer the total weakening effects are much greater than if the plant is grazed during only one use period.

3/ The "boot stage" refers to the nonmature seed stalks still in the leaf sheath and not yet emerged.

Vegetation Response to Proposed Grazing Systems. The proposed action includes grazing systems which prescribe livestock grazing during all seasons of the year, although winter grazing is proposed for only one small allotment (less than 1 percent of the ES Area).

Estimates of vegetation impacts resulting from the proposed action are based upon the above-cited range research studies (see "Vegetation Response to Season of Grazing Use") and professional judgment. Although the studies were not performed within the ES Area boundaries, they are believed to be applicable to the ES Area since they considered basic plant needs. When plant needs for food, reproduction, and establishment are provided, similar responses result regardless of location (Martin 1975). It should be remembered, however, that the predicted impacts are best estimates only and should not be interpreted as certainties. The monitoring studies described in Chapter 1 are designed to reveal the actual vegetation impacts of the proposed action. If the desired results are not being achieved, the stocking rate and grazing management system would be revised as necessary.

To facilitate a meaningful analysis, the proposed grazing systems are grouped into categories as shown in Table 3-7, which also shows one-year vegetation impacts by grazing use period. The effects of defoliation (grazing) shown in Table 3-6 were considered when determining the single year impacts to vegetation described in Table 3-7. The qualifying terms "slightly," "greatly," or "normal" were used to assist the reader in gaining an understanding of the magnitude (degree) of impact. These terms help describe the three principal plant responses: vigor, seed production, and litter accumulation. The descriptive footnotes on Table 3-7 should be carefully reviewed.

When reading the short-term impacts to vegetation in Table 3-7 one may incorrectly conclude that a single grazing treatment would impact the vegetation beyond its ability to recover. Hormay (1970) pointed out that perennial plants store enough food to last for several years, so that even if the plants are defoliated (grazed) for a year or two, they do not die. Under a grazing program that allows continuous close grazing year after year during the green period, perennial plants cannot make and replenish food reserves. As a result, the reserves are ultimately depleted and the plants die. However, by periodically resting the plants from defoliation (grazing) the basic needs of forage plants can be met. Hormay concluded that one or two years of growing season rest are usually adequate to restore plant vigor.

The reader is cautioned to review not only the one-year impacts for any given allotment but also the net long-term impacts shown in Table 3-8. Table 3-7 reflects impacts from grazing systems only; Table 3-8 shows the combined effects of forage allocation and grazing systems. For purposes of net long-term impact identification in Table 3-8, range improvements were considered part of grazing systems because fencing, water developments, and other improvements were considered essential to implement the grazing systems.

TABLE 3-7

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION
BY GRAZING SYSTEM AND GRAZING USE PERIOD

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
REST ROTATION SYSTEMS USING THREE TREATMENTS RR-3			
Dempsey Allotment	20,014	One pasture grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early fall through late fall (10/16-12/15)	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead).
		One pasture completely rested	Vigor, seed production, and litter accumulation normal.
Macon Flat Allotment	38,982	Two pastures grazed late spring (5/01-6/15) then grazed again early fall to late fall (10/16-11/30)	Vigor, seed production, and litter accumulation greatly reduced by spring use; vigor not affected but litter accumulation reduced by fall use - results are cumulative.
		One pasture completely rested	Vigor, seed production, and litter accumulation less than normal following two years of combined spring/fall use.
**North Gooding Allotment County Line Pasture Flat Top Pasture Peck Meadow Pasture	24,588	Two pastures grazed late spring (5/01-6/15) then grazed again early fall through late fall (10/16-12/15)	Vigor, seed production, and litter accumulation greatly reduced by spring use; vigor not significantly affected but litter accumulation reduced by fall use - the results are cummulative.
		One pasture rested completely	Vigor, seed production, and litter accumulation nearly normal.
		Except County Line Pasture which would have 43 percent of available AUMs grazed early fall through late fall (10/16-12/15)	Vigor not significantly affected, some seed planted by trampling, litter accumulation reduced (standing dead).
Picabo Allotment	7,870	Two pastures grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced
		Two pastures grazed early summer through late summer (7/01-8/31)	Vigor, seed production, and litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation much less than normal following four years of defoliation during active grazing periods.
Compound Allotment (Single fenced area)	457	Entire allotment grazed late spring through early summer (5/15-7/15) on year 1	Vigor, seed production, and litter accumulation greatly reduced.
		Entire allotment grazed late summer to early fall (7/16-9/15) on year 2.	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced
		Entire allotment completely rested on year 3	Vigor, seed production, and litter normal, seedlings established.
**King Hill Allotment Bellmare & South Pasture Hog Creek Pasture Walker Reservoir Pasture	20,334	One pasture grazed late spring (5/01-5/31)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late spring to early summer (6/01-6/30)	Vigor, seed production, and litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation less than normal after two years grazing in late spring and early summer.
Lava Allotment	28,000	One pasture grazed late spring to late summer (5/01-7/20)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late summer to early fall (7/20-9/30)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation normal, seedlings established.
Struthers Allotment (Single fenced area)	2,392	Entire allotment grazed late spring to early summer (5/01-6/30) on year 1.	Vigor, seed production, and litter accumulation greatly reduced
		Entire allotment grazed early summer through late summer (7/01-8/31) on year 2.	Vigor reduced between July 1 and July 31, only slightly reduced after that, seed trampling effectiveness reduced from grazing three weeks prior to seed ripe (7/20) but some seed planted, litter accumulation reduced.
		Entire allotment completely rested on year 3.	Vigor, seed production, and litter accumulation nearly normal, limited seedling establishment.
Ticeska Allotment Track Allotment	3,891 1,974	One pasture grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early summer through late summer (7/01-8/31)	Vigor reduced between July 1 and July 31, only slightly reduced after that, seed trampling effectiveness reduced from grazing three weeks prior to seed ripe (7/20) but some seed planted, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal, limited seedlings establishment.

TABLE 3-7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
**Canal Allotment (North Pasture Only)	399	Entire area grazed late spring to early fall on year 1 (5/01-9/30)	Vigor, seed production, and litter accumulation greatly reduced, some destruction of seedlings established the prior year.
Hill City Branch Allotment (Two fenced areas used as one)	687	Entire area grazed late summer to early fall on year 2 (7/20-9/30)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
Kime Allotment (Single fenced area)	600	Entire area completely rested on year 3	Vigor, seed production, and litter accumula-ion nearly normal, seedlings established.
REST ROTATION SYSTEMS USING FOUR TREATMENTS RR-4			
Pioneer Allotment	6,762	One pasture grazed early spring to late spring (4/16-5/15)	Vigor, seed production moderately to greatly reduced, litter accumulation (standing dead) reduced, new litter accumulation greatly reduced.
		One pasture grazed late spring through early summer (5/16-7/15)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late summer to early fall (7/16-9/15)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal, seedlings established.
Richfield Allotment	22,015	One pasture grazed early spring to late spring (4/16-5/30)	Vigor and seed production moderately to greatly reduced, litter accumulation (standing dead) reduced, new litter accumulation greatly reduced.
		One pasture grazed late spring through early summer (6/01-7/15)	Vigor, seed production, and litter accumulation reduced.
		Two pastures grazed late summer to early fall (7/16-10/05)	Vigor slightly reduced, some seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal.
**Clover Creek Allotment Bliss Point Pasture Bray Lake Pasture Canal Pasture White Arrow Spring Pasture	16,664	One pasture grazed early spring to late spring (4/05-5/15), then again late fall to winter (11/24-12/31)	Vigor, seed production, and litter accumulation reduced by early grazing; vigor and reproduction not significantly reduced, litter accumulation further reduced by fall grazing.
		One pasture grazed early spring (4/01-4/14) then again in late fall (11/10-11/31)	Vigor and seed production moderately reduced, litter accumulation reduced (standing dead) by early grazing; vigor and reproduction not significantly reduced, litter accumulation further reduced by fall grazing
		One pasture grazed early spring to late spring (4/01-5/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation less than normal following one year of spring use and two years of spring and fall use.
Kinzie Butte Allotment	8,684	One pasture grazed early spring (4/16-4/30), then again from late spring to late summer (6/10-7/19)	Vigor and seed production moderately reduced, litter accumulation largely not affected by early spring sheep use; vigor, seed production and litter accumulation reduced by later use.
		One pasture grazed from late spring to early summer (5/01-6/20)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late summer (7/20-8/31), then again early fall through late fall (10/16-12/15)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced by late summer grazing; vigor and reproduction not significantly affected but litter accumulation further reduced by fall grazing.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal.
REST ROTATION SYSTEMS USING FIVE TREATMENTS RR-5			
Rattlesnake Allotment	20,281	One pasture grazed late spring (5/5-5/31)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late spring to early summer (6/01-6/26)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early summer to late summer (6/27-7/22)	Vigor, seed production, and litter accumulation reduced.
		One pasture grazed late summer (7/23-8/16)	Vigor moderately reduced to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal.

TABLE 3 - 7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
MODIFIED REST ROTATION SYSTEMS USING THREE TREATMENTS MRR-3			
**Black Canyon Allotment City of Rocks Pasture Connet Springs Pasture Mormon Reservoir Pasture	23,441	One pasture grazed late spring to late summer (5/30-7/25)	Vigor, seed production, and litter accumulation reduced
		One pasture grazed late summer to early fall (7/26-9/15)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested except for light sheep trailing use during a two week period sometime between 5/01-6/20 (less than 20 AUMs for three days use)	Vigor, seed production, and litter accumulation nearly normal, seedlings established.
**Black Canyon Allotment Dead Horse Pasture Four Mile Pasture Open Crossing Pasture	27,114	One pasture grazed early spring to late spring (4/16-5/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late summer to early fall (7/25-9/15)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested except for light sheep trailing use during a two week period sometime between 5/01-6/20 (less than 20 AUMs for three days use)	Vigor, seed production, and litter accumulation normal, seedlings established.
North Shoshone Allotment	93,628	One pasture grazed late spring to late summer (5/01-7/20), then again early fall to late fall (10/16-12/15)	Vigor, seed production, and litter accumulation greatly reduced by early grazing; vigor and reproduction not significantly affected but litter accumulation further reduced by fall grazing.
		One pasture grazed late summer to early fall (7/20-9/30), then again early fall to late fall (10/16-12/15)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced by summer grazing; vigor and reproduction not significantly affected but litter accumulation further reduced by fall grazing.
		One pasture rested from cattle use but 500 AUMs of sheep use allowed early spring to late spring (4/16-6/15)	Vigor, seed production, and litter accumulation nearly normal since sheep use would never exceed 14 percent of available yearly growth, most seedlings established.
MODIFIED REST ROTATION SYSTFMS USING FOUR TREATMENTS MRR-4			
***Davis Mountain Allotment Canal Pasture Lower Ferguson Pasture Lower Radermacher Pasture Onion Patch Pasture	18,749	One pasture grazed early spring (4/20-4/30)	Vigor and seed production moderately reduced, litter accumulation reduced (standing dead).
		One pasture grazed late spring (5/01-6/15)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late fall (11/21-12/01)	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead).
		One pasture rested from cattle use. Note: Two pastures receive use by sheep in late spring (5/01-6/15) even though rested from cattle use	Canal and Onion Patch Pastures: Vigor, seed production, and litter accumulation normal. Lower Radermacher Pasture: Vigor, seed production, and litter accumulation less than normal because of 16 percent sheep use during critical season. Lower Ferguson Pasture: Vigor, seed production, and litter accumulation much less than normal because of 37 percent sheep use during critical season.
Timmerman East Allotment	28,952	Sonners Pasture: Grazed early spring to late spring (4/16-6/10) taking 77 percent of available forage,then again early fall to late fall (10/16-12/15) taking 21 percent of available forage one year (99 percent of available forage)	Vigor, seed production, and litter accumulation greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation further reduced (standing dead) by fall grazing.
		Grazed early spring to late summer (4/16-7/20) taking 77 percent of available forage,then again early fall to late fall (10/16-12/15) taking 21 percent of available forage one year (99 percent of available forage)	Same impacts as above with some cumulative effects.
		Grazed early spring through late spring (4/16-6/15) taking 21 percent of available forage, then again late summer (7/21-8/31) taking 56 percent of available forage, then again early fall to late fall (10/16-12/15) taking 21 percent of available forage one year (98 percent of available forage)	Same impacts as above with cumulative effects.
		Grazed early spring through late spring (4/16-6/15) taking 21 percent of available forage, then again early fall to late fall (10/16-12/15) taking 21 percent of available forage (42 percent of available forage).	Vigor, seed production, and litter accumulation very much less than normal as a result of two years of grazing during the most critical growing season and one year during a slightly less critical season.

TABLE 3-7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
Timmerman East Allotment (Continued)		Poleline Pasture: This pasture would be grazed exactly like the Sonners Pasture except for the following percent consumpsion of available forage: (4/16-6/10) 86% (10/16-12/15) 24% Both Seasons 110%,one year (4/16-7/20) 86% (10/16-12/15) 24% Both seasons 110%,one year (4/16-6/15) 24% (7/21-8/31) 62% (10/16-12/15) 24% All seasons 110%,one year (4/16-6/15) 24% (10/16-12/15) 24% Both Seasons 48%,one year	The short term impacts identified for the Sonners pasture would also apply to the Poleline Pasture. However, the magnitude of the impacts would be increased because of the heavy utilization during three of the four years in the grazing cycle.
		Lincoln and Blaine Pastures: Grazed early spring to late spring (4/16-6/10) then,again early fall to late fall (10/16-12/15) one year	Vigor, seed production, and litter accumulation greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation further reduced (standing dead) by fall grazing.
		Grazing late spring to late summer (6/11-7/20) one year	Vigor, seed production, and litter accumulation reduced.
		Grazed early spring through late spring (4/16-6/15) then,again late summer (7/21-8/31),then again early fall to late fall (10/16-12/15) one year	Vigor, seed production, and litter accumulation reduced by spring grazing; very limited seed trampling with moderate reduction in vigor, and further reduction in litter accumulation by summer grazing; vigor and reproduction not significantly affected, litter accumulation further reduced (standing dead) by fall grazing.
		Completely rested from grazing one year	Vigor, seed production, and litter accumulatation less than normal following three years of grazing during critical growing periods.
DEFERRED ROTATION SYSTEMS USING TWO TREATMENTS DR-2			
**Canal Allotment South Pasture	112	One pasture grazed late spring to late summer (5/01-7/20)	Vigor, seed production, and litter accumulation reduced; most of last year's seedlings destroyed, a few survive.
		One pasture grazed late summer to early fall (7/21-9/30)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
Lower Magic Allotment	263	One pasture grazed late spring to late summer (5/01-7/20)	Vigor, seed production, and litter accumulation reduced; most of last year's seedlings destroyed, a few survive.
		One pasture grazed late summer to early fall (7/21-10/10)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
Spud Patch Allotment Tikura Allotment	3,894 3,643	One pasture grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, very few would survive.
		One pasture grazed early summer through late summer (7/01-8/31)	Vigor, seed production, and litter accumulation moderately reduced; only limited seed trampling,as much of the seed is consumed prior to "seed ripe" time.
Spring Creek Allotment	563	One pasture grazed with sheep for a short period between late spring and late summer (5/15-7/20)	Vigor, seed production, litter accumulation only slightly reduced on grazed areas because the sheep would move through quickly.
		One pasture grazed with sheep for a short period between late summer and late fall (7/20-11/30)	Vigor not significantly affected, very little seed planted by trampling, litter accumulation only slightly reduced on grazed areas because the sheep would move through quickly.
Gwin Ranch Allotment	487	One pasture grazed late spring to late summer (6/01-7/30)	Vigor, seed production, and litter accumulation reduced; most of last year's seedlings destroyed, but some would survive.
		One pasture grazed late summer to early fall (8/01-9/30)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.

TABLE 3-7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
**Clover Creek Allotment Coyote Hill Pasture Monument Gulch Pasture	25,771	One pasture grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced; practically all of last year's seedlings destroyed.
		One pasture grazed early fall to late fall (10/16-11/23)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead).
**North Gooding Dog Creek Pasture Willows Pasture	16,817	One pasture grazed early spring through late spring (4/16-6/16), then again early fall through late fall (10/16-12/15)	Vigor, seed production, and litter accumulation greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation further reduced by fall grazing
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal.
Swinging Bridge Allotment **Timmerman West Allotment Wedgetop Pasture Well Pasture	2,939 11,230	One pasture grazed early spring through late spring (4/16-6/15)	Vigor, seed production, and litter accumulation reduced; practically all of last year's seedlings destroyed.
		One pasture grazed early fall through late fall (10/16-12/15)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead).
The Pasture Allotment (single fenced area)	918	Entire allotment grazed late spring to early summer (5/16-7/03)	Vigor, seed production and litter accumulation greatly reduced; practically all of last year's seedlings destroyed.
		Entire allotment grazed early fall to late fall (10/16-12/03)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead).
DEFERRED ROTATION SYSTEMS USING THREE TREATMENTS DR-3			
***Davis Mountain Allotment Deer Creek Pasture Upper Ferguson Pasture Upper Radermacher Pasture	18,994	Two pastures grazed late spring to late summer (5/14-7/22)	Vigor, seed production, and litter accumulation greatly reduced; practically all of last year's seedlings destroyed.
		One pasture grazed early fall to early winter (9/25-11/06), then again (11/15-12/30)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead)
Magic Allotment	6,052	One pasture grazed early spring to late spring (4/16-5/15)	Vigor and seed production moderately reduced, litter accumulation reduced (standing dead).
		One pasture grazed late spring through early summer (5/16-7/15)	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, a few survive.
		One pasture grazed late summer (7/16-8/15)	Vigor moderately to slightly reduced, much seed planted by trampling (especially crested wheatgrass with ability to produce viable seed following two year's of spring use), litter accumulation reduced.
DEFERMENT OF USE UNTIL AFTER PEAK OF FLOWERING DUF			
***Davis Mountain Allotment Long Gulch Pasture	1,287	Graze intermingled public and private land in a single fenced area from early summer to early fall (7/11-9/25) each year	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced; seedlings have good chance for survival.
North Slope Allotment	661	Graze intermingled public and private land in a single fenced area from early summer to early fall (7/01-10/15)	Vigor moderately reduced, some seed planted by trampling, litter accumulation reduced; seedlings have fair chance for survival.
DEFERMENT OF USE UNTIL AFTER SEED RIPE DUS			
Cove Creek Allotment	54	Graze intermingled public and private land in a single fenced area from late summer to early fall (8/01-9/30)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced; seedlings have excellent chance for survival.
**King Hill Allotment North Pasture	5,034	Graze 401 available AUMs anytime between late summer and late fall (8/01-11/30)	Vigor moderately to slightly reduced or not significantly affected with much to little seed planted by trampling depending on how soon after 8/01 grazing would begin; litter accumulation reduced in any case; seedlings have excellent chance for survival.
Schooler Creek Allotment	58	Graze intermingled public and private land in a single fence area from late summer to late fall (7/21-11/09)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced; seedlings have excellent chance for survival.

TABLE 3-7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
DEFERMENT OF USE UNTIL AFTER FALL DORMANCY DUD			
"101" Allotment	4,138	Graze 305 available AUMs between late fall and winter (11/01-2/28)	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead); unstable sandy soils protected when grazed while moist and/or frozen.
MODIFIED DEFERRED ROTATION WITH SPRING SHEEP USE IN ALL PASTURES USING TWO TREATMENTS WITH CATTLE MDR-2			
Hash Spring Allotment	5,746	One pasture grazed with sheep three weeks in late spring (5/25-6/15) using from 22 percent to 25 percent of available AUMs, then grazed by cattle from early summer to late summer (6/16-8/22)	Vigor, seed production, and litter accumulation reduced; practically all of last year's seedlings destroyed.
		One pasture grazed with sheep three weeks in late spring (5/25-6/15) using from 22 percent to 25 percent of the available AUMs then, grazed again by cattle from late summer through early fall (8/23-10/31)	Vigor, seed production, and litter accumulation slightly reduced by light spring sheep use; vigor slightly reduced to not significantly affected, some seed planted by trampling, litter accumulation reduced (standing dead) by fall cattle use.
MODIFIED DEFERRED ROTATION WITH SPRING SHEEP USE IN SOME PASTURES USING FIVE TREATMENTS MDR-5			
Indian Allotment	35,348	Interstate, Bliss Well and Clover Creek Pastures (Low elevation)	
		One pasture grazed by cattle and sheep from early spring to early summer (4/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed by sheep only from early spring to early summer (4/01-6/30), taking 16 percent or less of available forage, then grazed by cattle from early fall through late fall (10/16-12/15)	Vigor, seed production, and litter accumulation slightly reduced by light spring sheep use; vigor not significantly affected, some seed (crested wheatgrass) planted by trampling, litter accumulation reduced (standing dead) by fall cattle use.
		One pasture grazed by sheep only from early fall through late fall (10/16-12/15)	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead); last year's crested wheatgrass seedlings have good to excellent chance for survival.
		Migration Pasture	
		All available AUMs are grazed from early spring to early summer (4/01-6/30) by sheep and cattle moving from low to high elevation range for two consecutive years	Vigor, seed production, and litter accumulation greatly reduced with cumulative effects.
		Sixteen percent of available AUMs used by sheep grazing from early spring to early summer (4/01-6/30); cattle trailed through quickly in the spring; less than 60 percent of available AUMs grazed by cattle from early fall through late fall (10/16-12/15) for one year	Vigor, seed production, and litter accumulation slightly to moderately reduced by spring sheep use; vigor not significantly affected, little viable seed to trample after two consecutive years of spring use, litter accumulation (standing dead) reduced; the part-season rest provided on year 3 would probably not entirely compensate for the spring use on years 1 and 2.
		Tri-County Pasture (High elevation)	
		Sixteen percent of available AUMs on year 1 and 22 percent on year 2 grazed by sheep during late spring (5/01-6/15); grazed by cattle from early fall to late fall (10/16 to as late as 12/15 weather permitting)	Vigor, seed production, and litter accumulation slightly to moderately reduced by light spring sheep use; vigor not significantly affected, considerable seed planted by trampling, litter accumulation reduced (standing dead) by fall cattle use; two growing seasons of partial rest would more than compensate for one year of grazing during the critical growing season.
		No sheep grazing on year 3, but grazed by cattle from late spring to early summer (5/15-6/30)	Vigor, seed production, and litter accumulation greatly reduced.

TABLE 3-7 Continued

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATIO (GRAZING) 3/ OR NON DEFOLIATION (RESTING) 4/
ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA			
Black Buttes Allotment	49	Grazing late spring to early summer (6/01-6/30) every year	Vigor, seed production, and litter accumulation greatly reduced.
"46" Allotment	208	Graze late spring (5/01-6/10) every year	Vigor, seed production, and litter accumulation greatly reduced.
Fricke Allotment	87	Graze early spring through late spring (4/16-6/15) every year	Vigor, seed production, and litter accumulation greatly reduced.
Poison Creek	269	Graze with one to three bands of sheep (1,000 sheep per band) two to three days per band in late spring (5/01-5/30) or early fall to late fall (10/16-11/30)	The impact on the vegetation is not significant this is a continuation of the present trailing use and the entire 269 acres are in the GOOD vegetation condition category.
Springdale	310	Graze intermingled public and private land late spring to late summer (5/01-7/23) every year	Vigor, seed production, and litter accumulation reduced.
**Timmerman West Mahoney Flat Pasture	3,220	The entire fenced area would be used for trailing sheep both in early to late spring (4/16-6/15) and in early fall through late fall (10/16-12/15)	
		On year 1, spring sheep use would consume 62 percent of available forage; fall sheep use would consume 38 percent of available forage	Vigor, seed production, litter accumulation reduced by spring use; vigor not significantly affected, little if any seed planted by trampling, litter accumulation (standing dead) reduced by fall use.
		On year 2, spring sheep use would consume 38 percent of available forage; fall sheep use would consume 62 percent of available forage	Vigor, seed production, litter accumulation only moderately reduced by spring use (relatively light use); vigor not significantly affected, some seed planted by trampling, litter accumulation reduced (standing dead) by fall use (relatively heavy use).

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks(***), that allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

2/ Both period of use, e.g., "early spring" and "late spring", and specific calendar dates are given. The periods of use are the same periods for which phenological (life cycle) occurrences and effects of defoliation (grazing) are defined in Table 3 The calendar dates provide a means to determine more precisely what the impacts of grazing within a period will be. For example, plant vigor is reduced to a greater degree by grazing between 7/16 and 7/31, when the plant is still green, than by grazing between 8/16 and 8/31, when the plant is almost dormant, even though the range of both dates falls within the defined late summer use period.

3/ Modifying words are used in the statement of impact. It is not possible to exactly quantify the impact of grazing on plant vigor, reproductive success, or litter (dead plant parts) accumulation except under controlled conditions. Species variation, normal variation within species, grazing use period, class of grazing animal (cattle, sheep), animal behavior and other factors defy quantification. Still, the magnitude of expected impact may be greater (or lesser) in some instances than in others. The magnitude is defined according to this spectrum:

LESSER Not Significantly Affected : Slightly Reduced : Moderately Reduced : Reduced : Greatly Reduced → GREATER

4/ Non-defoliation, or resting forage plants from grazing, has beneficial effects. The plant is able to complete its NORMAL annual life cycle, or at least part of the cycle, without the stressful effects of losing part of its food manufacturing tissue (leaves and stems) or part of its reproductive tissue (seedheads and seeds). Table 3 shows some effects from defoliation at various periods through the year.

The beneficial impacts of part-season or whole-season rest are defined according to this spectrum:

Much Less Than Normal : Less Than Normal : Nearly Normal : Normal →

Much Less Than Normal	Normal
This is the condition of plants weakened by several seasons of very stressful defoliation	This is the condition of plants protected from grazing

TABLE 3-8

NET LONG-TERM IMPACTS OF THE PROPOSED ACTION ON VEGETATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds)	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, 3/ GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS
BLACK BUTTES	5,600	3,200	43% Decrease	The proposed initial stocking rate would require 2,400 pounds less forage than the present stocking rate. The annual spring grazing would not provide the necessary rest from grazing during the critical growing season. However, the combined forage allocation and grazing system would result in a net long-term improvement of plant vigor. The total ground cover of plant litter would increase over the long term because of the reduced stocking rate. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
BLACK CANYON	3,483,200	1,826,400	48% Decrease	The proposed initial stocking rate would require 1,656,800 pounds less forage than the present stocking rate. Both three-treatment modified rest rotation grazing systems would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing systems would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
CANAL	54,400	37,600	31% Decrease	The proposed initial stocking rate would require 16,800 pounds less forage than the present stocking rate. The three-treatment rest rotation and two treatment deferred rotation grazing systems should provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing systems would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
CLOVER CREEK	3,062,400	1,624,800	47% Decrease	The proposed initial stocking rate would require 1,437,600 pounds less forage than the present stocking rate. The four-treatment rest rotation and two treatment deferred rotation grazing systems would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing systems would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
COMPOUND	66,400	48,000	28% Decrease	The proposed initial stocking rate would require 18,400 pounds less forage than the present stocking rate. The three treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
COVE CREEK	8,000	3,200	60% Decrease	The proposed initial stocking rate would require 4,800 pounds less forage than the present stocking rate. The deferment of use until after seed ripe grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
DAVIS MOUNTAIN	2,696,800	3,250,400	20% Increase	The proposed initial stocking rate would require 553,600 pounds more forage than the present stocking rate. The four treatment modified rest rotation grazing system (on 48 percent of the allotment) would provide the necessary rest from grazing to meet the basic plant needs. The combined forage increase and grazing system would result in net long-term maintenance or increase of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The three-treatment deferred rotation grazing system (on 49 percent of the allotment) would not provide the necessary rest from grazing during critical growing periods to meet the basic plant needs. The combined forage increase and grazing system would result in a net long-term reduction of plant vigor and seed production. The total ground cover of plant litter would decrease over the long term. The deferment of use until near seed ripe (7/11-9/25) grazing system (on 3 percent of the allotment) would provide the necessary rest from grazing to meet the basic plant needs. The combined forage increase and grazing system would result in net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. When all factors are considered, the specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
DEMPSEY	2,093,600	892,800	57% Decrease	The proposed initial stocking rate would require 1,200,800 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for the allotment would be met in 15 years.

TABLE 3-8

NET LONG-TERM IMPACTS OF THE PROPOSED ACTION ON VEGETATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds)	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS
FRICKE	13,600	5,600	59% Decrease	The proposed initial stocking rate would require 8,000 pounds less forage than the present stocking rate. The annual spring grazing would not provide the necessary rest from grazing during the critical growing season, however, the combined forage allocation and grazing system would result in a net long-term improvement of plant vigor. The total ground cover of plant litter would increase over the long term because of the reduced stocking rate. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
GWIN RANCH	21,600	49,600	130% Increase	The proposed initial stocking rate would require 28,000 pounds more forage than the present stocking rate. The two treatment deferred roatation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The 130 percent increase in proposed stocking rate results both from a higher per acre inventoried grazing capacity than presently recognized and from additional acreage of public land formerly not licensed because of oversight. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
HASH SPRING	320,000	320,000	0	The proposed initial stocking rate would require the same amount of forage as the present stocking rate. The modified deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would be maintained or increased. The specific objective of "species composition" would be partially met; all other specific objectives of the Proposed Action would be met in 15 years.
HILL CITY BRANCH	71,200	45,600	36% Decrease	The proposed initial stocking rate would require 25,600 pounds less forage than the present stocking rate. The three treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
INDIAN	3,868,800	1,911,200	50% Decrease	The proposed initial stocking rate would require 1,957,600 pounds less forage than the present stocking rate. The five treatment modified deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
KIME	80,000	36,800	54% Decrease	The proposed initial stocking rate would require 43,200 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
KING HILL	2,402,400	903,200	62% Decrease	The proposed initial stocking rate would require 1,499,200 pounds less forage than the present stocking rate so a net long-term improvement would occur on at least one-half of the allotment. The combined forage allocation and grazing system would result in net long-term improvement of plant vigor and seed production as well as an increase in the total ground cover of plant litter on areas not accessible to cattle. The effect of the substantial downward adjustment in stocking rate would be to lessen the amount of area adversely impacted. The proposed three-treatment rest-rotation grazing system would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, flat areas, and other areas easily accessible to cattle. Two consecutive years of grazing during the most critical spring and early summer use periods followed by resting one year would probably not allow enough vigor, seed production, and litter accumulation to reverse the present downward trend on areas heavily used by livestock. Deferment of use until after seed ripe time in the North Pasture along with the proposed stocking rate would result in a net long-term improvement. Vegetation condition, plant vigor, seed production, and litter accumulation would all improve The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
KINZIE BUTTE	1,060,800	576,000	46% Decrease	The proposed initial stocking rate would require 484,800 pounds less forage than the present stocking rate. The four-treatment rest-rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.

TABLE 3-8

NET LONG-TERM IMPACTS
OF THE PROPOSED ACTION ON VEGETATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds)	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS
LAVA	1,999,200	540,000	73% Decrease	The proposed initial stocking rate would require 1,459,200 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
LOWER MAGIC	58,400	41,600	29% Decrease	The proposed initial stocking rate would require 16,800 pounds less forage than the present stocking rate. The two treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
MACON FLAT	3,743,200	2,004,800	46% Decrease	The proposed initial stocking rate would require 1,738,400 pounds less forage than the present stocking rate, so a net long-term improvement would occur on approximately one-half the allotment. However, the three-treatment rest rotation grazing system would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, on flat areas, and non-rocky areas easily accessible to livestock. The combined forage allocation and grazing system would result in a net long-term reduction of plant vigor and seed production on areas heavily used by livestock. The total ground cover of plant litter would remain constant over the long term. The present overgrazed condition would continue on accessible areas. The present downward trend on 26 percent of the allotment would continue but the rate would be reduced. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
MAGIC	894,400	640,000	28% Decrease	The proposed initial stocking rate would require 254,400 pounds less forage than the present stocking rate. The three-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
NORTH GOODING	,875,200	3,000,000	60% Increase	The proposed initial stocking rate would require 1,124,800 pounds more forage than the present stocking rate. The three-treatment rest rotation and two-treatment deferred rotation grazing systems would provide the necessary rest from grazing to meet the basic plant needs. But, the combined increased forage allocation and grazing systems, as proposed would result in a net long-term reduction of plant vigor and seed production. The total ground cover of plant litter would decrease over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years. However, the stocking rate would probably remain at, or near, the five year average licensed use. In that case, the grazing systems would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be fully met in 15 years.
NORTH SHOSHONE	9,530,400	5,863,200	38% Decrease	The proposed initial stocking rate would require 3,667,200 pounds less forage than the present stocking rate. The three-treatment modified rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
NORTH SLOPE	97,600	75,200	23% Decrease	The proposed initial stocking rate represents 28 AUMs (22,400 pounds) less than the five year average licensed use. In reality no more than 94 AUMs (75,200) pounds have been taken off the 661 acres of public land even though the livestock operator has paid for 122 AUMs (97,600 pounds). The deferment of use until past peak-of-flowering grazing system is a continuation of the existing situation. It is expected to maintain the present high-FAIR and GOOD range condition since most of the area is steep and relatively inaccessible to livestock. The long term impact would be maintenance of present plant vigor, seed production, and litter accumulation. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
PICABO	778,400	336,000	57% Decrease	The proposed initial stocking rate would require 442,400 pounds less forage than the present stocking rate, so a net long-term improvement would occur on approximately one-half the allotment. However, the five pasture, three-treatment rest rotation grazing system would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, flat areas, and areas easily accessible to cattle. The combined forage allocation and grazing system would result in a net long-term reduction of plant vigor and seed production on areas heavily used by cattle. The total ground cover of plant litter would remain constant or increase over the long term. Even though the proposed grazing system provides a year of complete rest, vigor, seed production, and litter accumulation would be much less than normal following four years of grazing during critical active growing periods on those portions of the allotment heavily used by cattle. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.

TABLE 3-8

NET LONG-TERM IMPACTS
OF THE PROPOSED ACTION ON VEGETATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds)	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS
PIONEER	1,696,800	388,000	77% Decrease	The proposed initial stocking rate would require 1,308,800 pounds less forage than the present stocking rate. The four-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
POISON CREEK	8,000	33,600	320% Increase	The proposed action would authorize active grazing up to the inventoried grazing capacity of 42 AUMs (33,600 pounds). However, the average licensed use has been only 10 AUMs (8,000 pounds) by up to three bands of sheep (1,000 sheep per band) trailing through for two or three days per band during late spring or fall. This is expected to continue. The short term impact would not be significant (Table 3-7 and the net long term impact is maintenance of the existing situation on the entire 269 acres. Vigor, seed production, and litter accumulation would remain normal.
RATTLESNAKE	1,652,000	599,200	64% Decrease	The proposed initial stocking rate would require 1,052,800 pounds less forage than the present stocking rate. The five-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
RICHFIELD	1,834,400	1,876,800	2% Increase	The proposed initial stocking rate would require 42,400 pounds more forage than the present stocking rate. The four-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
SCHOOLER CREEK	13,600	16,000	18% Increase	The proposed initial stocking rate would require 2,400 pounds more forage than the present stocking rate. The deferment until seed ripe grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years
SPUD PATCH	264,000	244,000	7% Decrease	The proposed initial stocking rate would require 20,000 pounds less forage than the present stocking rate. The two-treatment deferred rotation grazing system would provide just enough rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
SPRING CREEK	0	72,000	Does Not Apply	In actuality the proposed consumption of forage is the same as the present. The present consumption is based on the five year (1972-1976) average licensed use. There is no record of any licensed use on the 563 acres of public land which is fenced with 1616 acres of private land. The Proposed Action would license 90 AUMs (72,000 pounds) annually to be used in connection with the private land. The two-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years with the exception of "livestock forage production" which would only partially be met.
SPRINGDALE	18,400	31,200	70% Increase	The proposed initial stocking rate would require 12,800 pounds more forage than the present stocking rate. The 70 percent proposed increase results both from a higher per acre inventoried grazing capacity and additional acreage of public land fenced with the private land but formerly not licensed because of oversight. The 310 acres of public land lie on the sideslopes and ridgetops which are not heavily used by livestock. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
STRUTHERS	210,400	132,800	37% Decrease	The proposed initial stocking rate would require 77,600 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.

TABLE 3-8

NET LONG-TERM IMPACTS OF THE PROPOSED ACTION ON VEGETATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds)	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS
SWINGING BRIDGE	132,800	148,000	10% Increase	The proposed initial stocking rate would require 15,200 pounds more forage than the present stocking rate. The two-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production because only one half of available livestock AUMs would be grazed in any year. The "vegetation condition class" objective for this allotment would only be partially met. The other specific objectives of the Proposed Action would be fully met.
THE PASTURE	74,400	57,600	22% Decrease	The proposed initial stocking rate would require 16,800 pounds less forage than the present stocking rate. The two-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
TICESKA	660,800	255,200	61% Decrease	The proposed initial stocking rate would require 405,600 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years. Existing seedings wouldestablish and become productive seedings.
TIKURA	172,000	163,200	5% Decrease	The proposed initial stocking rate would require 8,800 pounds less forage than the present stocking rate. The two-treatment deferred rotation grazing system would provide just enough rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance to slight reduction of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years
TIMMERMAN EAST	773,600	1,108,800	48% Increase	The proposed initial stocking rate would require 335,200 pounds more forage than the present stocking rate. The modified four pasture rest rotation grazing system would not provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term decrease in plant vigor and seed production. The total ground cover of plant litter would decrease over the long term. The objectives of the Proposed Action would not be met in 15 years.
TIMMERMAN WEST	458,400	952,800	108% Increase	The proposed initial stocking rate would require 494,400 pounds more forage than the present stocking rate. The two-treatment deferred rotation and annual spring grazing systems would provide the necessary rest from grazing to meet the basic plant needs. However, the combined forage allocation and grazing systems would result in a net long-term reduction of present plant vigor and seed production. The total present ground cover of plant litter would decrease over the long-term. The specific objective of maintaining the present vegetation condition would be met. The specific objectives for livestock forage production and vegetation condition could be only partially met.
TRACK	246,400	140,800	43% Decrease	The proposed initial stocking rate would require 105,600 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
"46"	20,000	11,200	44% Decrease	The proposed initial stocking rate would require 8,800 pounds less forage than the present stocking rate. The annual spring grazing would not provide the necessary rest from grazing during the critical growing season. However, the combined forage allocation and grazing system would result in a net long-term improvement of plant vigor. The total ground cover of plant litter would increase over the long term because of the reduced stocking rate. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
"101"	463,200	244,000	47% Decrease	The proposed initial stocking rate would require 219,200 pounds less forage than the present stocking rate. The deferment until after dormancy grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years
TOTAL FOR ALL ALLOTMENTS	46,984,800	30,510,400	35% Decrease	

1/ Present consumption of forage represents the 1972-1976 average licensed use (in AUMs) multiplied by 800 pounds per AUM.

2/ Proposed consumption of forage represents the proposed initial stocking rate (in AUMs) multiplied by 800 pounds per AUM.

3/ Table 1-4 shows specific objectives of the Proposed Action. Only the objectives for "Livestock Forage Production", "Vegetation Composition", and "Vegetation Condition Class" are considered here.

Cumulative Impacts

The impacts to vegetation from three principal cause agents (allocation of forage, range improvements, and grazing systems) have been discussed above. However, because the proposed action calls for combinations of these, the net long-term impacts must be identified by analyzing cause agent interaction. As the proposed range improvements were grouped with the grazing systems in the above analysis, only two interacting factors, allocation of forage (adjustment in stocking level) and grazing systems, need to be reviewed.

Several past and present problems, resulting from stocking levels and grazing management, would be greatly reduced or eliminated with implementation of the Proposed Action. These problems are: (1) heavy utilization of yearly forage production, (2) early spring to early summer grazing on most of the ES Area, (3) repeated grazing during the same growing season on the same area, and (4) poor livestock distribution.

The present 71 percent average utilization of yearly forage production lowers plant vigor, prevents adequate seed production, and discourages reproduction of desirable forage species. The proposed adjustments in the stocking rate would reduce this existing impact. The grazing systems proposed for most allotments would rotate the utilization through each pasture so that only part of an allotment would be grazed to the surveyed capacity during the critical green period when defoliation (grazing) is most harmful to the plants. The only exceptions to proper stocking levels under the proposal are: Macon Flat Allotment (Spring Creek Pasture would be overstocked by 3 percent, Big Bend Pasture by 10 percent and Magpie Pasture by 20 percent), Picabo Allotment (Arrowhead Pasture would be overstocked by 13 percent), Timmerman East Allotment (Poleline Pasture would be overstocked by 10 percent). These overstocking deficiencies in the Proposed Action are discussed along with other problems for the above allotments at the end of this section.

The present early spring to early summer grazing (April 1 to June 30) makes up 65 percent of the yearly use occurring in the ES Area. Forage plants depend upon adequate storage of carbohydrate reserves to ensure a food supply when rapid growth begins in the spring. Most of the carbohydrate reserve is used during the spring season to produce shoot growth. Reserves are lowest when the shoot is about half grown (Hormay 1970). The carbohydrate storage is made during the latter part of the growing season and reaches its peak during early August. If grazing occurs during the spring and early summer when plants are drawing heavily upon their own food reserves, it depletes the reserves and leaves the plant in a low state of vigor. The following growing season, the plant is left with inadequate storage of carbohydrates, resulting in poor growth and decreased vigor. If moderate (41-60 percent utilization) or heavy (61-80 percent utilization) spring and early summer grazing occurs year after year, it eventually kills the desirable forage plants. The proposed adjustments in livestock grazing combined with the proposed grazing management systems, which incorporate periodic rest during the critical spring and early summer growing seasons, would nearly eliminate this existing problem. The small single-fenced areas for which annual spring grazing is proposed (4,143 acres; less than 1 percent of the ES Area) are exceptions. The other exceptions include an estimated 67,500 acres (12 percent of the ES Area) within the Davis Mountain, King Hill, Macon Flat, Picabo, and Timmerman East Allotments (see discussion of grazing system deficiencies for each of these five allotments at the end of this section).

The present problems of poor livestock distribution and repeated grazing during the growing season on the same area would be greatly reduced by the proposed adjustments in the initial stocking rate and implementation of the grazing management systems.

Repeated grazing defoliates desirable forage plants and prevents them from producing adequate leaves, seedstalks, and seed heads. Under these conditions, the plants are unable to produce viable seed, and reproduction is reduced or eliminated.

Livestock, especially cows with calves, congregate in areas where desirable forage and water are readily available. They stay in these areas until the available forage or water is depleted. The livestock then begin using forage in areas of difficult accessibility and/or of low palatability. They also begin traveling up to two miles from water. Allowing livestock to concentrate in the same areas year after year eventually results in the removal of desirable perennial forage species and promotes the establishment of undesirable annual or shrubby vegetation. It can also cause localized soil compaction problems that lead to the removal of nearly all vegetation and result in accelerated erosion. The compaction problems can become especially severe if livestock are allowed to congregate on heavy clay soils during the spring season when the soil moisture content is high.

The most serious impacts resulting from poor livestock distribution occur in the riparian zones (11,651 acres, 2 percent of the ES Area), and other areas where slopes are gentle, forage is present, and water is available (estimated at 186,000 acres, 33 percent of the ES Area). Livestock remain in these areas until the palatable forage is depleted. They also trample the unpalatable vegetation. This eventually removes most of the ground cover and results in increased erosion and degradation of the site.

Adjusting the stocking rate would not solve the problem of livestock remaining on certain preferred areas and repeatedly grazing the same plants. However, by adjusting the stocking rate and providing adequate periodic rest, the key forage plant species (Table 3-5), as well as other palatable forage species, would be maintained or improved (Hormay 1970).

The specific objectives of the proposed action (Table 1-4) would be fully met in fifteen years on thirty allotments (62 percent of the ES Area). The objectives would be partially met on eleven allotments (33 percent of the ES Area) as quantified in Table 3-9. On one allotment, Timmerman East (which makes up 5 percent of the ES Area), the objectives would not be met.

Three categories of objectives are shown in Table 3-9: (1) livestock grazing capacity, (2) vegetation composition, and (3) vegetation condition class. These categories are discussed separately below.

The livestock grazing capacity objectives would be fully met for the Hash Springs and Swinging Bridge Allotments (2 percent of the ES Area) as well as for the 30 allotments not shown on Table 3-9 (62 percent of the ES Area). Vegetation available for livestock forage would increase from the present production but would fall short of the stated objectives for the Davis Mountain, King Hill, Macon Flat, Picabo, Spud Patch, and Spring Creek Allotments (20 percent of the ES Area). The livestock grazing capacity would be expected to remain approximately the same for the Tikura Allotment (less than 1 percent of the ES Area) but would fall short of the stated objective. Vegetation available for livestock forage would be expected to decrease from the present for the North Gooding, Timmerman East, and Timmerman West Allotments (15 percent of the ES Area). This is based primarily on the respective proposed 60 percent, 48 percent, and 108 percent increase in the initial stocking rate.

The vegetation composition objectives shown in Table 3-9 were based on field studies of present composition at specific locations in each allotment so they could later be monitored. The composition of key species (by dry weight) would fully meet the stated objectives in the Swinging Bridge Allotment (less than 1 percent of the ES Area) as well as in the 30 allotments not shown on Table 3-9 (62 percent of the ES Area). Key species composition would be higher than present, but less than the stated objectives, in the Davis Mountain, Hash Spring, King Hill, Macon Flat, and Picabo Allotments (21 percent of the ES Area). Composition of key species would remain approximately the same in the Spud Patch, Spring Creek, and Tikura Allotments (1 percent of the ES Area). The composition of key species would decrease from the present in the North Gooding, Timmerman East, and Timmerman West Allotments (15 percent of the ES Area) primarily as a result of the proposed increase in initial stocking rate.

Vegetation condition objectives were derived using existing observed and/or measured field data. Future condition objectives represent the best professional estimate of future response. Range condition changes slowly, but in-depth analysis of the proposed forage allocation and grazing systems indicates the objectives would be fully met in the Hash Spring, Macon Flat,

TABLE 3-9

ALLOTMENTS HAVING SPECIFIC OBJECTIVES WHICH WOULD BE
PARTIALLY MET OR ARE NOT ACHIEVABLE IN FIFTEEN YEARS

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY (AUMS)			VEGETATION COMPOSITION ON DESIGNATED KEY MANAGEMENT AREAS (PERCENT OF TOTAL HERBAGE PRODUCTION)				VEGETATION CONDITION CLASS (ACRES)			
	PRESENT	OBJECTIVE	EXPECTED	PERCENT COMPOSITION OF KEY SPECIES		OBJECTIVE	EXPECTED	PRESENT		OBJECTIVE	EXPECTED
DAVIS MOUNTAIN	4,283	5,374	4,523	Lower Area	3%	7%	5%	Seeding	4,815	4,815	4,815
				Combination of:				Br. Cont.	1,056	---	---
				Bluebunch wheatgrass				H.Dist.	1,585	---	---
				Thurber needlegrass				Poor	10,853	5,855	7,063
				Crested wheatgrass				Fair	18,927	25,628	24,828
				Upper Area	7%	13%	5%	Good	1,794	2,732	2,324
				Idaho fescue							
				Bluebunch wheatgrass							
				Thurber needlegrass							
				Crested wheatgrass							
HASH SPRING	852	973	973	Combination of:	12%	20%	14%	Br. Cont.	---	40	40
				Idaho fescue				Poor	330	330	330
				Bluebunch wheatgrass				Fair	1,880	1,860	1,860
				Western needlegrass				Good	3,536	3,516	3,516
				Prairie junegrass							
				Combination of:	15%	15%	11%				
				Tapertip hawksbeard							
				Agoseris							
				Butterweed groundsel							
KING HILL	1,470	1,895	1,708	Bluebunch wheatgrass	5%	15%	7%	Seeding	2,599	2,599	2,599
				Thurber needlegrass	5	15	7	Poor	19,657	11,670	15,880
				Sandberg bluegrass	15	35	20	Fair	2,189	10,176	5,966
				Bottlebrush squirreltail	15	35	17	Good	923	923	923
				Crested wheatgrass (seedings only)	50	50	50				
MACON FLAT	3,367	4,414	3,719	Combination of:	35%	50%	40%	Poor	19,779	18,579	18,579
				Bluebunch wheatgrass				Fair	18,749	18,778	18,778
				Bottlebrush squirreltail				Good	454	1,625	1,625
				Sandberg bluegrass							
NORTH GOODING	5,532	7,175	4,953	Bluebunch wheatgrass	7%	12%	6%	Seeding	2,420	2,420	2,420
				Crested wheatgrass	1	6	1	Br. Cont.	2,720	2,720	2,720
								Poor	12,382	12,382	12,382
								Fair	16,620	16,620	7,263
								Good	7,263	7,263	7,263
PICABO	452	681	554	Bluebunch wheatgrass:				Seeding	861	861	861
				On loamy sites	2%	10%	3%	Poor	5,243	4,784	4,784
				On south slopes	3	10	4	Fair	1,766	1,910	1,910
				On north slopes	14	19	16	Good	---	315	315
SPUD PATCH	305	425	321	Bluebunch wheatgrass:				Poor	3,108	2,130	3,088
				On loamy sites	3%	8%	3%	Fair	786	1,514	806
				On north slopes	6	12	6	Good	---	250	---
SPRING CREEK	90	100	94	Combination of:	40%	40%	40%	Fair	563	563	563
				Bluebunch wheatgrass							
				Idaho fescue							
				Thurber needlegrass							
				Combination of:	25%	25%	25%				
				Agoseris							
				Butterweed groundsel							
				Tapertip hawksbeard							
SWINGING BRIDGE	383	415	415	Bluebunch wheatgrass	15%	20%	20%	Poor	320	---	120
				Needlegrass	2	5	5	Fair	---	---	200
								Good	2,619	2,939	2,619
TIKURA	205	241	205	Bottlebrush squirreltail	T	2%	T	Poor	3,643	2,868	3,643
								Fair	---	775	---
TIMMERMAN EAST	1,803	2,328	1,711	Poleline & Lincoln Pastures:				Poor	8,960	5,600	10,250
				Bluebunch wheatgrass	2%	7%	2%	Fair	19,992	23,352	18,702
				Thurber needlegrass	5	11	5				
				Blaine & Sonners Pastures:							
				Bluebunch wheatgrass	6%	12%	6%				
				Thurber needlegrass	5	11	5				
TIMMERMAN WEST	1,191	1,582	1,063	Bluebunch wheatgrass:				Br. Cont.	1,280	1,280	1,280
				On untreated areas	13%	21%	12%	Poor	1,066	1,066	1,066
				On sprayed Areas	47	47	42	Fair	3,158	3,158	3,158
				In Well Pasture	21	21	19	Good	8,946	8,946	8,946
				Thurber needlegrass	13%	20%	12%				

North Gooding, Picabo, Spring Creek, and Timmerman West Allotments (19 percent of the ES Area) as well as for the 30 allotments not shown on Table 3-9 (62 percent of the ES Area). Vegetation condition would improve from the present in the Davis Mountain, King Hill, Spud Patch, and Swinging Bridge Allotments (13 percent of the ES Area), but fall short of meeting the stated objectives. The vegetation condition in the Tikura Allotment (less than 1 percent of the ES Area) would remain approximately the same as presently but would fall short of the stated objectives. Condition would deteriorate in the Timmerman East Allotment (5 percent of the ES Area).

All allotments would maintain or improve the present livestock grazing capacity, vegetation composition of key management species, and vegetation condition class in 15 years under the Proposed Action except three: North Gooding, Timmerman East, and Timmerman West (approximately 15 percent of the ES Area). On two of these, North Gooding and Timmerman West, actual decreases in grazing capacity and vegetation composition and condition would not necessarily occur. This analysis is based on the proposed increases in stocking rate (60 percent and 108 percent, respectively) that could occur if the grazing privileges were fully utilized. However, in these two sheep allotments, the five-year average licensed use would probably be maintained over the foreseeable future, due to the expected continuation of the voluntary nonuse that has occurred in the past. Thus, the above analysis is a "worst case analysis" based on a stocking rate not likely to occur.

However, the Timmerman East Allotment would probably be fully stocked each year if one operator were allowed to convert 83 percent of the available livestock AUMs from sheep to cattle (part of Proposed Action) and the other operators make yearly spring and fall sheep trailing use in the allotment. Thus, in this allotment the proposed 48 percent increase in stocking rate would be fully expected to occur. The results shown in Table 3-9 for this allotment would be expected to take place as a result.

Five allotments have proposed grazing systems (on the entire allotment or portion thereof), totaling 115,132 acres of public land or 20 percent of the ES Area total, that would adversely affect a wide variety of vegetation, although the impact would be especially pronounced for riparian vegetation. Two of these, Davis Mountain and Timmerman East, call for increases in livestock stocking rates of 20 percent and 48 percent respectively. The other three, King Hill, Macon Flat, and Picabo have proposed downward adjustments in stocking rates of 62, 46, and 57 percent, respectively. Even with the substantial downward adjustments, the forage plants on grazed areas would not be allowed sufficient rest during critical growing periods. The impacts for each of the five allotments are discussed below.

Davis Mountain Allotment

A 20 percent increase in stocking rate is proposed. This compounds the grazing system problem on the upper part of the allotment. A three-treatment deferred-rotation grazing system is proposed for that upper area (18,994 acres of public land, 49 percent of the allotment). The vegetation that would be affected includes approximately 600 acres in the Major Drainages/Riparian Zone, 3,000 acres in the Productive Seeding Zone, 4,100 acres in the Low Sagebrush Zone, and 11,300 acres in the Mountain Big Sagebrush Zone (see Table 2-9).

The proposed grazing system would not provide sufficient rest during the critical growing season because two of the pastures would be grazed between 5/14 and 7/22. One pasture would be rested until 9/25 and then grazed. The single growing season of rest provided would not be sufficient to restore plant vigor, seed production, and litter accumulation following two years of spring grazing on 13,475 acres of suitable public land (71 percent of the 18,994 acres in the upper area).

King Hill Allotment

A 62 percent decrease in stocking rate is proposed. The adjustment would lessen the area on which vegetation is presently being adversely affected by grazing; therefore, a net long-term improvement would occur on at least one-half the allotment. However, areas near water, flat areas, and areas easily accessible to cattle would not respond well to the grazing system because cattle would concentrate in those areas.

A three-treatment rest-rotation grazing system is proposed for 20,334 acres of public land (80 percent of the allotment). This grazing system would not provide sufficient rest during the critical spring growing season for the maintenance of forage plants on areas easily accessible to cattle, estimated at 8,100 acres. The vegetation receiving impacts would include approximately 1,700 acres in the Major Drainages/Riparian Zone, 2,600 acres in the Productive Seeding Zone, 800 acres in the Low Sagebrush Zone, and 3,000 acres in the Wyoming Big Sagebrush Zone (see Table 2-9).

The grazing system calls for two of the three pastures to be grazed during the most critical growing season (5/01 - 6/15). One pasture would be rested; but vigor, seed production, and litter accumulation would be less than normal after a single season of rest following two years of grazing in late spring and early summer.

Macon Flat Allotment

A 46 percent downward adjustment in stocking rate is proposed, so a net long-term improvement in vegetation would occur on nearly one-half the allotment. However, the proposed grazing system, with pasture imbalance, would not be entirely counteracted by the downward adjustment.

The three-treatment rest-rotation grazing system, proposed for the entire allotment (38,982 acres of public land), would not provide sufficient rest during the critical spring growing season to maintain the forage plants on areas near water, on flat areas, and on nonrocky areas easily accessible to livestock. These areas cover an estimated 9,500 acres (25 percent of the allotment). The vegetation receiving impacts would include approximately 700 acres in the Major Drainages/Riparian Zone, 2,900 acres in the Mountain Big Sagebrush Zone, and 5,900 acres in the Alkali Sagebrush Zone (see Table 2-9).

The grazing system calls for two of the three pastures to be grazed during the most critical growing season (5/01 - 6/15) and then grazed again during 10/16 - 11/30. One pasture would be rested; but plant vigor, seed production, and litter accumulation would be less than normal following two years of combined spring/fall grazing.

Compounding this problem is the proposed grazing use beyond the allowable livestock stocking rate (based on the 1976 vegetation inventory). The proposal calls for stocking each of the two use pastures to harvest 1,253 AUMs. The Spring Creek Pasture, having 1,212 available AUMs, would be overstocked by 3 percent; the Big Bend Pasture, having 1,142 available AUMs, would be overstocked by 10 percent; the Magpie Pasture, having 1,043 available AUMs, would be overstocked by 20 percent.

Picabo Allotment

A 57 percent downward adjustment in stocking rate is proposed. The adjustment would lessen the area on which vegetation is presently being adversely affected by grazing, so a net long-term improvement would occur on approximately one-half the allotment. However, areas near water, flat areas, and areas easily accessible to cattle (estimated to be 1,950 acres or 25 percent of the allotment), would not respond well to the proposed five-pasture, three treatment rest-rotation grazing system because cattle would concentrate in them. The affected vegetation would include less than 100 acres of riparian vegetation around springs and seeps, 200 acres in the Lava Flow Complex Zone, 400 acres in the Mountain Big Sagebrush Zone, and 1,300 acres in the Wyoming Big Sagebrush Zone (see Table 2-9).

The grazing system proposed for the allotment (totaling 7,870 acres of public land) would not provide sufficient rest during the critical spring and early summer growing season to maintain the forage plants on livestock concentration areas. The system calls for two of the five pastures to be grazed 5/01 - 6/30 each year and two pastures to be grazed 7/01 - 8/31. One pasture would be rested; but vigor, seed production, and litter accumulation would be much less than normal on grazed areas following four years of grazing during active growing periods. The Arrowhead Pasture, having 72 available AUMs, would be stocked at 81 AUMs (13 percent overstocked) four out of five years.

Timmerman East Allotment

A 48 percent increase in stocking rate is proposed. During the last several years only 31 percent of allowable sheep AUMs have been used during spring and fall. The proposed action calls for converting 83 percent of sheep AUMs to cattle AUMs. Changing the class of livestock accounts for most of the proposed increase in stocking rate because the cattle AUMs would be used every year. In addition, sheep grazing would occur during the summer where none has occurred in the recent past.

The modified four-treatment rest-rotation grazing system proposed for the entire allotment (28,952 acres of public land) would not meet the requirements for forage plants to maintain themselves in their present state of vigor. The affected vegetation would include approximately 5,500 acres in the Wyoming Big Sagebrush Zone, and 23,400 acres in the Lava Flow Complex Zone (see Table 2-9).

The Sonners and Poleline Pastures would be grazed on three consecutive years during the critical growing period. The pasture rested from cattle use would be grazed by sheep both during the critical spring season and during fall. The Sonners Pasture would be stocked to harvest 99 percent of available forage for three years, then 42 percent during the fourth (or "rest") year. The Poleline Pasture would be stocked to harvest 110 percent of available forage for three years, then 48 percent during the fourth (or "rest") year.

The Lincoln and Blaine Pastures have treatments that come closer to meeting plant requirements. Complete rest of either pasture would occur every fourth year; but vigor, seed production, and litter accumulation would be less than normal following three years of grazing during critical growing periods.

Proposed Unallotted Areas

Seventy tracts of public land totaling 9,518 acres have been identified as proposed unallotted areas (Map 1-1). Of these, 52 tracts, totaling 8,596 acres, would not be considered for livestock grazing but rather would be set aside for other purposes.

Since the grazing and/or fire history of each of these 52 tracts is very different, the response of the vegetation to protection would be different over the next fifteen years. Generally, the vegetation condition would improve. Those tracts in fair and good vegetation condition today would be expected to improve by one condition class. This prediction is based upon interpretation of data from Timmerman Exclosure Number Two which has not been grazed since 1962. Those in highly disturbed or poor condition would have a longer recovery time and the expected condition class at the end of fifteen years would be the same as today. Improvement would take place on highly disturbed or poor condition tracts, but the changes would occur very slowly. This prediction is based upon the observed vegetation response to the absence of grazing along the right-of-way of old U.S. Highway 30 west of Bliss, Idaho, which was fenced in 1960.

The expected vegetation trend would be upward on all 52 tracts protected from livestock grazing. This is predicted even on those tracts designated specifically for use by wintering deer (Map 1-1, reference numbers 58, 59, 60). Because deer normally consume a high percentage of shrubs in their winter diet and because there is currently an overabundance of shrubs on the poor and fair condition portions of these tracts, the vegetation composition would be expected to improve toward the potential natural vegetation.

Vegetation condition and trend would also be expected to improve on those fourteen tracts (totaling 625 acres) proposed for inclusion into allotments sometime within the fifteen year life of the proposal. This would result from a reduction in present unauthorized grazing use, allocation of forage (adjustment of stocking rate), and inclusion in a grazing system.

Four tracts totaling 297 acres, while proposed as unallotted in terms of grazing privileges, would be used as stock trails, stock driveways, and holding fields. The existing highly disturbed and poor vegetation conditions would be expected to continue. Vegetation trend would be expected to remain static or trend downward slightly, depending on the magnitude of use of these tracts in handling livestock. With the proposed adjustments in livestock use, the number of concentrated livestock would be reduced. This would be a factor in minimizing the downward trend. Infestations of poisonous plants and/or noxious weeds on the four tracts would be expected to remain about the same as presently but reduced livestock concentrations could result in a slight decline.

The anticipated short- and long-term impacts from the construction of 32 miles of fence required for all the unallotted areas would be similar to those discussed under "Management Facilities" in this section.

Summary

The proposed action would be expected to result in both immediate and long-term benefits to the vegetation resource. The immediate benefit would result from reduced livestock grazing which would leave an estimated 16,474,400 pounds more vegetation in place. That vegetation, as litter, would provide protection against soil erosion and would improve the growing condition on site.

Several long-term benefits to vegetation would result from decreased livestock grazing (forage allocation), construction of range improvements, implementation of grazing systems on 564,630 acres of public land, and protection of 9,221 acres from livestock grazing (297 of the 9,518 acres proposed for unallotted areas would be used for livestock handling). Forage plant vigor would improve over the short term and longer term because the utilization of food manufacturing tissue (leaves and stems) would be reduced from an average of 71 percent of yearly growth to 46 percent of yearly growth. Because the grazing systems would provide regularly scheduled periodic rest during the critical green period, forage plant vigor and reproductive success would improve on all but an estimated 71,643 acres of public land (13 percent of the ES Area).

Various land treatments (primarily prescribed burning and seeding) on 5,852 acres would temporarily reduce vegetation production but would have long-term benefits from increased forage yield and greater variation in the plant community (decreased shrubs relative to grasses and forbs).

Protection of 9,518 acres from livestock grazing would have a positive effect on vegetation. Forage plants would be allowed to complete their yearly growth cycles relatively free of grazing (wildlife grazing would continue). Vigor, reproductive success, and litter accumulation would begin to increase the first year and would continue over the next 15 years.

The specific objectives of the Proposed Action which apply to the vegetation resource, livestock grazing capacity, vegetation, composition, and vegetation condition class would be fully met on 30 allotments (62 percent of the ES Area). The objectives would be partially met on 11 allotments (33 percent of the ES Area). On one allotment (5 percent of the ES Area) it would not be possible to meet the objectives.

Vegetation condition would be expected to improve over the next fifteen years under decreased stocking and more intensive grazing management. The expected vegetation condition and production (expressed in AUMs) are shown in Table 3-10. The expected future vegetation condition is portrayed on Map 3-1. These predictions are based on the combined knowledge of range management principles as taught in various western universities; upon years of field experience (over 95 years combined experience of persons in the Shoshone District who participated in gathering developing, and analyzing the data); upon observations and quantified field samples of grazed and ungrazed plant communities in, and adjacent to, the Shoshone ES Area; and upon broadly mapped present vegetation condition (available at the Shoshone District Office). They are the best professional estimates based upon applicable soils data, field samples, and past observed responses of vegetation. Although quantified, they are not to be taken as absolute because wildland management, unlike mathematics, is not an exact science.

A comparison of existing vegetation condition and expected condition in fifteen years is shown in Table 3-11. The amount of public land in the highly disturbed and poor vegetation condition classes would decrease from 48 to 42 percent of the ES Area. The public land acres in the fair and good condition classes would increase from 40 to 47 percent. The amount of ES Area public land in seedings would increase from 7 to 8 percent, while public land in the brush control category would decrease from 5 to 3 percent, primarily as a result of natural brush encroachment.

Vegetation production which could be allocated to livestock and/or wildlife would be expected to increase by 18 percent (from 53,900 to 63,351 AUMs) in fifteen years under the Proposed Action.

Future vegetation trend in 15 years under the Proposed Action, shown in Table 3-12, would be expected to be mostly upward as a result of decreased stocking and more intensive grazing management. Present trend was determined by field observation based on a one-time examination of the area and is represented by observed apparent trend rather than long-term observations. Predictions of future trend were based upon professional judgement using the same criteria as present trend. Public land in an upward trend is expected to increase from 11,650 acres (2 percent of the total) to 378,742 acres (67 percent of the total). Public land in a downward trend would decrease from 124,450 acres (22 percent of the total) to 22,126 acres (4 percent of the total). Public land in a static trend would decrease from 428,530 acres (76 percent of the total) to 163,762 acres (29 percent of the total).

TABLE 3-10

EXPECTED VEGETATICN CONDITION IN 15 YEARS
UNDER THE PROPOSED ACTION
(Public Land Only)

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
I. REST ROTATION (RR)														
A. RR With Three Treatments (RR-3)														
Dempsey Allotment	3,267	451	0	0	1,857	153	7,905	785	4,539	471	2,446	252	20,014	2,112
Macon Flat	0	0	0	0	0	0	18,579	1,586	18,778	2,084	1,625	206	38,982	3,876
**North Gooding Allotment	2,420	659	2,720	517	0	0	2,314	277	10,289	1,140	6,845	1,271	24,588	3,864
County Line Pasture														
Flat Top Pasture														
Peck Meadow Pasture														
Picabo Allotment	861	151	0	0	0	0	4,784	373	1,910	219	315	40	7,870	783
**Canal Allotment	0	0	0	0	0	0	0	0	399	52	0	0	399	52
North Pasture														
Compound Allotment	0	0	0	0	0	0	0	0	457	67	0	0	457	67
**King Hill Allotment	2,599	257	0	0	0	0	14,246	1,037	2,646	229	843	55	20,334	1,578
Bellmare & South Pasture														
Hog Creek Pasture														
Walker Reservoir Pasture														
Lava Allotment	2,000	380	2,500	400	0	0	5,540	400	17,960	700	0	0	28,000	1,880
Struthers Allotment	0	0	0	0	0	0	0	0	2,392	225	0	0	2,392	225
Ticeska Allotment	1,794	376	0	0	0	0	2,097	276	0	0	0	0	3,891	652
Track Allotment	0	0	1,138	204	0	0	0	0	836	86	0	0	1,974	290
Hill City Branch Allotment	0	0	0	0	0	0	407	42	280	38	0	0	687	80
Kime Allotment	0	0	0	0	0	0	354	30	246	30	0	0	600	60
TOTAL FOR RR-3	12,941	2,274	6,358	1,121	1,857	153	56,226	4,806	60,732	5,341	12,074	1,824	150,188	15,519
B. RR With Four Treatments (RR-4)														
Pioneer Allotment	1,794	434	0	0	165	14	4,803	535	0	0	0	0	6,762	983
Richfield Cattle Allotment	0	0	4,658	1,171	0	0	1,780	227	15,577	1,847	0	0	22,015	3,245
**Clover Creek Allotment	3,577	485	0	0	384	40	12,653	1,243	50	5	0	0	16,664	1,773
Bliss Point Pasture														
Bray Lake Pasture														
Canal Pasture														
White Arrow Spring Pasture														
Kinzie Butte Allotment	330	94	1,000	138	0	0	4,756	597	2,598	349	0	0	8,684	1,178
TOTAL FOR RR-4	5,701	1,013	5,658	1,309	549	54	23,992	2,602	18,225	2,201	0	0	54,125	7,179
C. RR With Five Treatments (RR-5)														
Rattlesnake Allotment	465	93	0	0	2,833	216	8,968	748	5,289	465	2,726	258	20,281	1,780
TOTAL FOR RR-5	465	93	0	0	2,833	216	8,968	748	5,289	465	2,726	258	20,281	1,780
II. MODIFIED REST ROTATION (MRR)														
A. MRR With Three Treatments (MRR-3)														
**Black Canyon Allotment	128	24	0	0	0	0	10,787	649	11,078	1,435	1,448	192	23,441	2,300
City of Rocks Pasture														
Connet Springs Pasture														
Mormon Reservoir Pasture														
**Black Canyon Allotment	3,846	582	0	0	2,750	259	19,257	1,429	743	88	518	74	27,114	2,432
Dead Horse Pasture														
Four Mile Pasture														
Open Crossing Pasture														
North Shoshone Allotment	6,637	1,380	0	0	1,631	235	50,226	7,602	32,601	5,018	2,533	384	93,628	14,619
TOTAL FOR MRR-3	10,611	1,986	0	0	4,381	494	80,270	9,680	44,422	6,541	4,499	650	144,183	19,351
B. MRR With Four Treatments (MRR-4)														
***Davis Mountain Allotment	2,617	444	0	0	0	0	5,162	243	9,670	579	1,300	126	18,749	1,392
Canal Pasture														
Lower Ferguson Pasture														
Lower Radermacher Pasture														
Onion Patch Pasture														
Timmerman East Allotment	0	0	0	0	0	0	10,250	569	18,702	1,189	0	0	28,952	1,758
TOTAL FOR MRR-4	2,617	444	0	0	0	0	15,412	812	28,372	1,768	1,300	126	47,701	3,150
III. DEFERRED ROTATION (DR)														
A. DR With Two Treatments (DR-2)														
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe														
**Canal Allotment	112	28	0	0	0	0	0	0	0	0	0	0	112	28
South Pasture														
**Clover Creek Allotment	0	0	0	0	0	0	3,510	221	20,193	1,445	2,068	172	25,771	1,838
Coyote Hill Pasture														
Monument Gulch Pasture														
Gwin Ranch	0	0	0	0	0	0	0	0	487	76	0	0	487	76
Lower Magic Allotment	207	50	0	0	0	0	0	0	56	16	0	0	263	66
Spring Creek Allotment	0	0	0	0	0	0	0	0	563	100	0	0	563	100
Spud Patch Allotment	0	0	0	0	0	0	3,088	232	806	109	0	0	3,894	341
The Pasture Allotment	0	0	0	0	695	63	223	20	0	0	0	0	918	83
Tikura Allotment	0	0	0	0	0	0	3,643	235	0	0	0	0	3,643	235
TOTAL FOR 1. DR-2	319	78	0	0	695	63	10,464	708	22,105	1,746	2,068	172	35,651	2,767

TABLE 3-10

EXPECTED VEGETATION CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION (Public Land Only)

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
2. DR-2 With Turnout to 6/15 Defer Until After 10/16														
**North Gooding Allotment	0	0	0	0	0	0	10,068	592	6,331	730	418	30	16,817	1,352
Dog Creek Pasture														
Willows Pasture														
Swinging Bridge Allotment	0	0	0	0	0	0	120	15	200	30	2,619	385	2,939	430
**Timmerman West Allotment	0	0	1,280	174	0	0	1,066	115	3,158	217	5,726	371	11,230	877
Wedgetop Pasture														
Well Pasture														
TOTAL FOR 2. DR-2	0	0	1,280	174	0	0	11,254	722	9,689	977	8,763	786	30,986	2,659
B. DR With Three Treatments (DR-3) Two Before and One After Seed Ripe														
***Davis Mountain Allotment	2,198	681	0	0	0	0	1,881	150	13,966	1,900	949	203	18,994	2,934
Deer Creek Pasture														
Upper Ferguson Pasture														
Upper Radermacher Pasture														
Magic Allotment	2,024	387	1,821	335	0	0	0	0	1,194	130	1,013	97	6,052	949
TOTAL FOR DR-3	4,222	1,068	1,821	335	0	0	1,881	150	15,160	2,030	1,962	300	25,046	3,883
IV. DEFERMENT OF USE (DU)														
A. DU Until Past Peak of Flowering; After 7/01 (DUF)														
***Davis Mountain Allotment	0	0	0	0	0	0	20	3	1,192	247	75	20	1,287	270
Long Gulch Pasture														
North Slope Allotment	0	0	0	0	0	0	32	4	233	32	396	58	661	94
TOTAL FOR DUF	0	0	0	0	0	0	52	7	1,425	279	471	78	1,948	364
B. DU Until Seed Ripe Time; After 7/20 (DUS)														
Cove Creek Allotment	0	0	0	0	0	0	54	5	0	0	0	0	54	5
**King Hill Allotment	0	0	0	0	0	0	1,634	180	3,320	370	80	10	5,034	560
North Pasture														
Schooler Creek Allotment	0	0	0	0	0	0	0	0	49	28	9	5	58	33
TOTAL FOR DUS	0	0	0	0	0	0	1,688	185	3,369	398	89	15	5,146	598
C. DU Until Dormant Season After 8/20 (DUD)														
"101" Allotment	1,133	189	0	0	184	20	2,821	204	0	0	0	0	4,138	413
TOTAL FOR DUD	1,133	189	0	0	184	20	2,821	204	0	0	0	0	4,138	413
V. MODIFIED DEFERRED ROTATION (MDR)														
A. MD With Spring Sheep Use in Both Pastures Rotating Two Treatments With Cattle (MDR-2)														
Hash Spring Allotment	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
TOTAL FOR MDR-2	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
B. MD With Rotation of Use Periods in Five Pastures (MDR-5)														
Indian Allotment	5,995	1,205	0	0	256	20	12,701	966	12,216	1,159	4,180	602	35,348	3,952
TOTAL FOR MDR-5	5,995	1,205	0	0	256	20	12,701	966	12,216	1,159	4,180	602	35,348	3,952
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)														
Black Buttes Allotment	0	0	0	0	0	0	49	5	0	0	0	0	49	5
"46" Allotment	0	0	0	0	0	0	208	17	0	0	0	0	208	17
Fricke Allotment	0	0	0	0	0	0	87	9	0	0	0	0	87	9
Poison Creek Allotment	0	0	0	0	0	0	269	45	0	0	0	0	269	45
Springdale Allotment	18	14	0	0	0	0	0	0	292	28	0	0	310	42
**Timmerman West Allotment	0	0	0	0	0	0	0	0	0	0	3,220	284	3,220	284
Mahoney Flat Pasture														
TOTAL FOR ASG	18	14	0	0	0	0	613	76	292	28	3,220	284	4,143	402
TOTALS Acres	44,022		15,157		10,755		226,672		223,156		44,868		564,630	
AUMs		8,364		2,949		1,020		21,750		23,360		5,908		63,351

1/ Allotments with two asterisks(**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks(***). That allotment has three distinct types of grazing systems. For an explanation of grazing system categories, see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

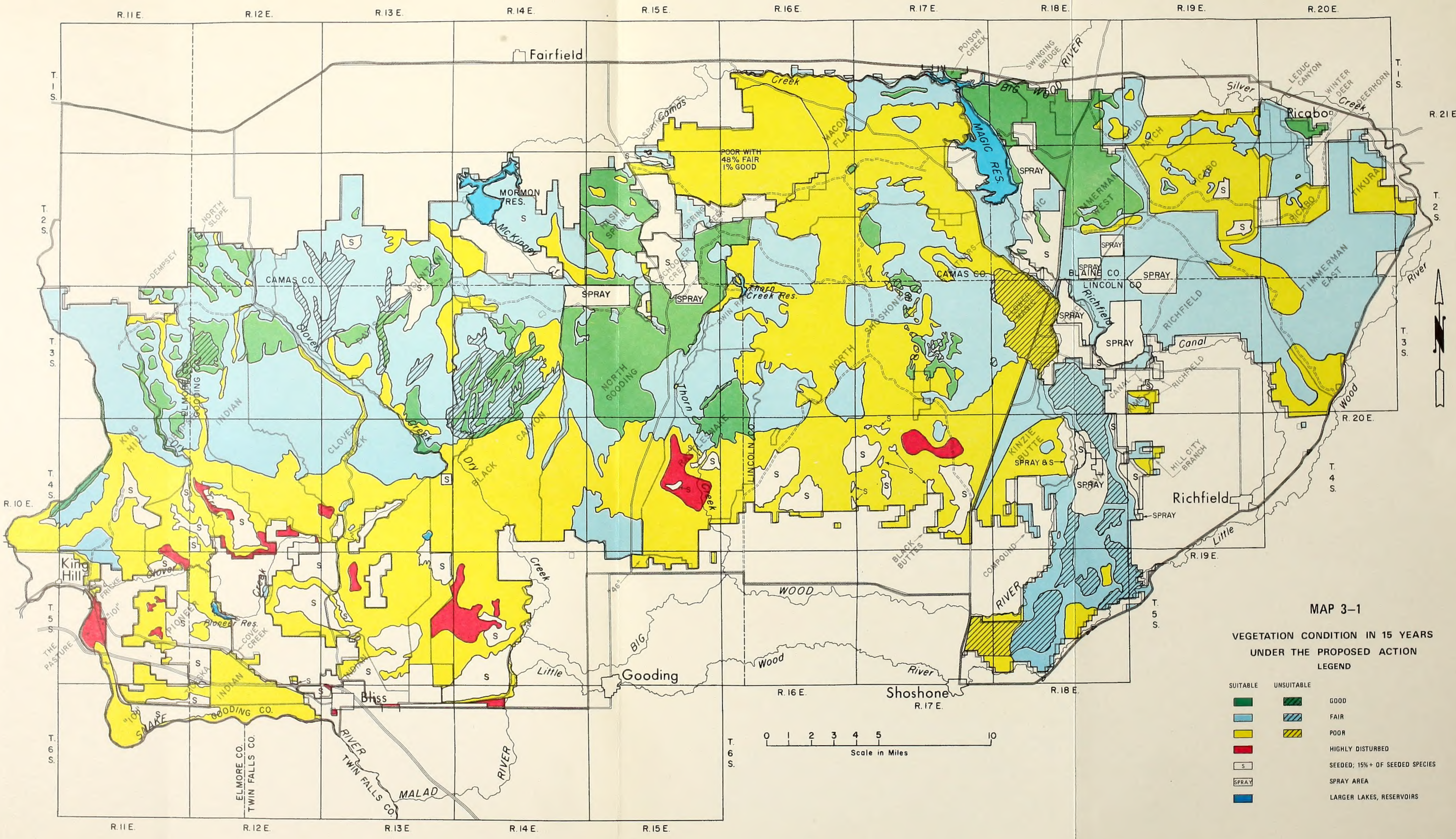
TABLE 3-11

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION AND EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION		DEGREE 2/ OF CHANGE (PERCENT)
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	
Seeding	36,878	6.5%	44,022	7.8%	19.4%
Brush Control	30,476	5.4	15,157	2.7	-50.3
Highly Disturbed	38,379	6.8	10,755	1.9	-72.0
Poor	234,931	41.0	226,672	40.1	- 3.5
Fair	186,157	33.0	223,156	39.5	19.9
Good	37,809	6.7	44,868	7.9	18.7

1/ Does not add to 100 percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment divided by total acres in the present environment for each vegetation condition category.



MAP 3–1

VEGETATION CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION

LEGEND

SUITABLE	UNSUITABLE	
🟩	▨	GOOD
🟦	▨	FAIR
🟨	▨	POOR
🟥		HIGHLY DISTURBED
S		SEEDED; 15%+ OF SEEDED SPECIES
SPRAY		SPRAY AREA
🟦		LARGER LAKES, RESERVOIRS

TABLE 3-12

EXPECTED VEGETATION TREND
IN 15 YEARS UNDER THE PROPOSED ACTION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	Public Land (Acres)	Expected Future Vegetation Trend		
		Upward (Acres)	Downward (Acres)	Static (Acres)
I. REST ROTATION (RR)				
A. RR. With Three Treatments (RR-3)				
Dempsey Allotment	20,014	20,014	---	---
Macon Flat Allotment	38,982	10.596	9,222	19,164
**North Gooding Allotment County Line Pasture Flat Top Pasture Peck Meadow Pasture	24,588		2,459	22,129
Picabo Allotment	7,870	2,028	1,074	4,768
**Canal Allotment North Pasture	399	399	---	---
Compound Allotment	457	457	---	---
**King Hill Allotment Bellmare & South Pastures Hog Creek Pasture Walker Reservoir Pasture	20,334	2,175	3,652	14,507
Lava Allotment	28,000	8,501	---	19,499
Struthers Allotment	2,392	2,392	---	---
Ticeska Allotment	3,891	3,891	---	---
Track Allotment	1,974	842	---	1,132
Hill City Branch Allotment	687	687	---	---
Kime Allotment	600	600	---	---
Total for RR-3	150,188	52,582	16,407	81,199
B. RR With Four Treatments (RR-4)				
Pioneer Allotment	6,762	6,762	---	---
Richfield Cattle Allotment	22,015	10,885	---	11,130
**Clover Creek Allotment Bliss Point Pasture Bray Lake Pasture Canal Pasture White Arrow Spring Pasture	16,664	16,664	---	---
Kinzie Butte Allotment	8,684	7,057	---	1.627
Total for RR-4	54,125	41,368	000	12,757
C. RR With Five Treatments (RR-5)				
Rattlesnake Allotment	20,281	20,281	---	---
Total for RR-5	20,281	20,281	000	000
II. MODIFIED REST ROTATION (MRR)				
A. MRR With Three Treatments (MRR-3)				
**Black Canyon Allotment City of Rocks Pasture Connet Springs Pasture Mormon Reservoir Pasture	23,441	23,441	---	---
**Black Canyon Allotment Dead Horse Pasture Four Mile Pasture Open Crossing Pasture	27,114	27,114	---	---
North Shoshone Allotment	93,628	93,628	---	---
Total for MRR-3	144,183	144,183	000	000
B. MRR With Four Treatments (MRR-4)				
***Davis Mountain Allotment Canal Pasture Lower Ferguson Pasture Lower Radermacher Pasture Onion Patch Pasture	18,749	18,749	---	---
Timmerman East Allotment	28,952	28,952	---	---
Total for MRR-4	47,701	47,701	000	000

TABLE 3-12

EXPECTED VEGETATION TREND IN 15 YEARS UNDER THE PROPOSED ACTION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	Public Land (Acres)	Expected Future Vegetation Trend		
		Upward (Acres)	Downward (Acres)	Static (Acres)
III. DEFERRED ROTATION (DR)				
A. DR With Two Treatments (DR-2)				
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe				
**Canal Allotment	112	---	---	112
South Pasture				
**Clover Creek Allotment	25,771	24,632	---	1,139
Coyote Hill Pasture				
Monument Gulch Pasture				
Gwin Ranch Allotment	487	---	---	487
Lower Magic Allotment	263	---	---	263
Spring Creek Allotment	563	---	---	563
Spud Patch Allotment	3,894	300	1,220	2,374
The Pasture Allotment	918	64	---	854
Tikura Allotment	3,643	---	---	3,643
Total for 1. DR-2	35,651	24,996	1,220	9,435
2. DR-2 With Turnout to 6/15; Defer Until After 10/16				
**North Gooding Allotment	16,817	---	1,683	15,134
Dog Creek Pasture				
Willows Pasture				
Swinging Bridge Allotment	2,939	580	---	2,359
**Timmerman West Allotment	11,230	---	1,120	10,110
Wedgetop Pasture				
Well Pasture				
Total for 2. DR-2	30,986	580	2,803	27,603
B. DR With Three Treatments (DR-3) Two Before and One After Seed Ripe				
***Davis Mountain Allotment	18,994	---	1,376	17,618
Deer Creek Pasture				
Upper Ferguson Pasture				
Upper Radermacher Pasture				
Magic Allotment	6,052	1,625	---	4,427
Total for DR-3	25,046	1,625	1,376	22,045
IV. DEFERMENT OF USE (DU)				
A. DU Until Past Peak of Flowering; After 7/01 (DUF)				
***Davis Mountain Allotment	1,287	---	---	1,287
Long Gulch Pasture				
North Slope Allotment	661	---	---	661
Total for DUF	1,948	000	000	1,948
B. DU Until Seed Ripe Time; After 7/20 (DUS)				
Cove Creek Allotment	54	54	---	---
**King Hill Allotment	5,034	4,148	---	886
North Pasture				
Schooler Creek Allotment	58	58	---	---
Total for DUS	5,146	4,260	000	886
C. DU Until Dormant Season After 8/20 (DUD)				
"101" Allotment	4,138	4,138	---	---
Total for DUD	4,138	4,138	000	000

TABLE 3-12

EXPECTED VEGETATION TREND IN 15 YEARS UNDER THE PROPOSED ACTION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	Public Land (Acres)	Expected Future Vegetation Trend		
		Upward (Acres)	Downward (Acres)	Static (Acres)
V. MODIFIED DEFERRED ROTATION (MDR)				
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments With Cattle (MDR-2)				
Hash Spring Allotment	5,746	1,430	---	4,316
Total for MDR-2	5,746	1,430	000	4,316
B. MDR With Rotation of Use Periods in Five Pastures (MDR-5)				
Indian Allotment	35,348	35,348	---	---
Total for MDR-5	35,348	35,348	000	000
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)				
Black Buttes Allotment	49	23	---	26
"46" Allotment	208	208	---	---
Fricke Allotment	87	19	---	68
Poison Creek Allotment	269	---	---	269
Springdale Allotment	310	---	---	310
**Timmerman West Allotment Mahoney Flat Pasture	3,220	---	320	2,900
Total for ASG	4,143	250	320	3,573
TOTAL FOR ALL GRAZING SYSTEMS	564,630	378,742	22,126	163,762

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in he allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks(***). That allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

IMPACTS ON TERRESTRIAL WILDLIFE

Chapter 2 identifies some 216 individual species (Mammals, Birds, Amphibians, Reptiles) which are found in the ES Area. Each of these species have individual habitat requirements or factors which are constantly acting to change their population size and composition. Some of the major factors include food, cover, water, weather, predation, disease, and inter- and intra-specific competition for both space and forage. The net effect of these factors is a change in the population, but no single factor is likely to cause an increase or decrease in population.

To assess the impacts of livestock grazing on wildlife populations, the population limiting factor or factors must first be identified. Once this is accomplished, the expected impacts of the grazing livestock and their related activities on these limiting factor(s) can be analyzed. Beneficial impacts brought about by livestock grazing do not necessarily result in an increase in the population. Those factors which can profoundly affect populations, such as hunting or weather, and yet have no relationship to grazing, can overcome the net result of improved grazing practices, reduced livestock numbers, seedings, etc.

The impacts (beneficial or adverse) resulting from the proposed action will be described individually in terms of how they affect the species habitat. In conjunction with the analysis of impacts to the habitat, conclusions are drawn concerning the responses of the major wildlife populations to the changes in habitat conditions. The conclusions are based on the premise that other factors, not affected by the proposal, will remain substantially unchanged, i.e., no major changes in the hunting seasons, no extreme weather conditions, etc.

Beneficial impacts are defined as those impacts which result in an improved habitat condition (increased carrying capacity) for a species or group of species. Adverse impacts are impacts which result in poorer habitat condition (reduced carrying capacity) for a species or group of species.

General Impacts

Forage Allocation

The allocation of forage would exhibit a beneficial or positive impact on all the species that rely either directly or indirectly on vegetation for food and/or cover. Essentially, this involves all species which inhabit the area for longer than one or two weeks. The vegetation allocated for big game AUMs (5,013) would provide sufficient forage for the deer, elk, and antelope populations found in the ES Area. Additionally, the unallocated 40 percent of the palatable species and essentially 100 percent of all unpalatable species would be available for wildlife. Unalloted areas would also provide a source of vegetation ungrazed by livestock.

The unallocated and unalloted vegetation would provide food for the many species that are dependent upon it, including the small seed-eating rodents and birds as well as the herbivorous species. It would also provide additional cover for the small mammals and birds which live and/or nest on the ground.

The beneficial effects of allocating forage as proposed would result in increased quantity and quality of wildlife food and cover (vegetation) and thus could increase populations for most wildlife species.

Season of Use

There are two periods of the year when the proposed livestock grazing could adversely impact wildlife and their habitat. The first is during the early spring when, regardless of allocation, the vegetation has just begun to initiate growth and most herbivorous creatures are seeking the new, succulent green forage. Livestock, when turned onto these ranges, would compete with the wildlife inhabiting the area for food.

Spring is a critical time of year for most wildlife species. They are either in the late stages of gestation or have recently given birth. In order to maintain themselves and their young they need to be on a high nutritional plane. When wildlife are competing with livestock for food, the quality and quantity of their diet decreases, resulting in reduced numbers and/or survival of young.

The second period of the year during which livestock could compete with wildlife regardless of allocated forage is during the fall and winter months. It is during this period when shrubs, because of their higher nutritional values, become more important in the diet of both domestic and wild grazing animals. Competition for shrubs found on big game winter ranges would be significant.

At other seasons of the year, grazing livestock, at the proposed stocking rate, would not significantly impact wildlife. This lack of impacts would result because adequate vegetation would be available for the necessary wildlife food and cover.

Grazing Systems

Grazing systems are normally described according to the number of pastures within a given allotment and by the treatment(s) occurring within the pastures. The greater the number of pastures within an allotment, the smaller each pasture will be, and the greater the concentration of livestock.

If livestock numbers are not reduced proportionally when grazing systems are devised and allotments subdivided, animal concentrations are increased. The proposed action describes systems that, on the average, suggest a 35 percent reduction from overall licensed use within the ES Area. However, it should not be assumed that proportional reductions were proposed for all those allotments recommended to be divided into two or more pastures.

Allotments including Gwin Ranch, Hash Spring, North Shoshone, Spud Patch, Timmerman East, and Timmerman West (approximately 26 percent of the ES Area) are proposed to be divided into two or more pastures, thus increasing the concentration of livestock in habitat areas identified as important or crucial for deer, elk, and/or sage grouse. Additionally, those allotments provide good habitat conditions for many small mammals and birds. The increased livestock concentration could increase competition for food, cover, and space between wildlife and livestock, thus reducing and/or displacing wildlife within the allotment. It is assumed that when species are given the opportunity to select home sites or territories, they do so because the site meets the habitat requirements of that species. Furthermore, if a displaced animal moves to another area, not of its own volition, it is assumed that the new area is somehow less desirable, and therefore, reduces the species rate of survival.

The rested and/or deferred pastures (approximately 154,000 acres) would provide temporary (not exceeding one year per pasture) areas of improved habitat conditions. The impacts resulting from those rested or deferred areas is presently unknown. Mobile species (e.g., deer or elk) that do not establish territories, or establish territories large enough to encompass several pastures within an allotment, would benefit from the rested or deferred areas. They would have the capability to move from one pasture to another depending upon the grazing treatments. Small sedentary species, animals with small home ranges or territories, do not have the ability to move from one pasture to another, and consequently must live in an environment that changes drastically with changing grazing treatments. Whether the population response would change proportionally with the habitat changes, or level off at a lower figure, is presently unknown. The proposal not to exceed 60 percent utilization within any pasture could reduce the adverse impacts (such as reduced availability of food and cover) of the heavier grazing treatments, thus maintaining higher wildlife populations.

The expected long-term result arising from the proposed grazing systems is an improvement in palatable vegetation (generally grasses and forbs). The increased vegetation would provide additional food and cover for the majority of the species inhabiting the ES Area. If the grasses and forbs respond to the grazing systems as predicted, it could adversely impact shrubs, which are important for many species.

Range Improvements

There are four major types of range improvement projects proposed for implementation. They include water developments, fencing, land treatments (burning, seeding, spraying, etc.), and stock trail development. Water developments, when properly constructed and maintained, for the most part beneficially impact wildlife. Many areas previously uninhabited by species because of the lack of water could become inhabited if water were available. In other instances, animals could extend their home ranges because of new water developments. Both circumstances disperse animals, making them less susceptible to disease, predators, etc. In contrast, water allows for the dispersal of livestock into areas which were previously not grazed. This could lead to competition for food and space between wildlife and livestock in such areas.

Fences would generally have little or no impact on small wildlife species. Potential adverse impacts to big game animals are addressed below in the "Impacts on Big Game" section.

In the short term, land treatment projects would create adverse impacts on wildlife habitat and populations. Sagebrush reduction projects (including spraying and burning) would remove overstory vegetation that is utilized by many birds and animals for either food or cover (specifically nesting cover for sage sparrows, sage threshers, sage grouse, meadowlarks, etc.). On the other hand, the long-term impacts would be beneficial for small mammals, sage grouse broods, and summering big game, due to an increase in grasses and succulent forbs.

Impacts resulting from the direct effects of fire would include the destruction of a few animals which would not escape the fire. A fire of low intensity and slow spread would, however, give most species the opportunity to flee outside the burn's boundaries or escape underground. Spring burns, if not properly timed and designed, would destroy a significant number of nests and/or young animals or birds.

Stock trails would allow improved access to livestock, thus increasing the opportunity for competition between livestock and wildlife. Additionally, the trails would improve the access for vehicular traffic, thus reducing the habitat value for species requiring seclusion.

Impacts on Big Game

Mule Deer

Forage allocations for deer (3,489 competitive AUMs) would beneficially impact deer populations by reducing the competition for forage between deer and livestock. The adverse impacts resulting from early spring and fall livestock grazing would be reduced but not eliminated by allocating deer forage.

Competition for early spring grasses and forbs would occur in the Indian, Clover Creek, and North Shoshone Allotments because of the early livestock turnout dates of 4/1, 4/1, and 4/16 respectively. New spring vegetation would be limited, and until such time as the forage outproduced the grazing demand, competition would exist. Competition would be both intra- as well as inter-specific. Pregnant does would be in the late stages of gestation at this time, and additional stress arising from a lack of high quality forage could reduce both fawn production and survival. Fawns and bucks would also be subsisting on a diet of relatively low nutritional values throughout the winter. By limiting the available forage through early spring livestock grazing, nutritional stress would continue, thus decreasing the animal's condition. The poorer condition could lead to increased susceptibility to disease and predators.

Fall livestock grazing (after August 31) is proposed for six allotments that contain deer winter habitat: Clover Creek, Davis Mountain, Dempsey, Indian, King Hill, and North Shoshone. These allotments contain approximately 73 percent (45,400 acres) of the crucial winter habitat and 27 percent (20,040 acres) of the noncrucial deer winter habitat in the ES Area. Fall grazing would adversely impact deer populations by reducing the amount of available palatable shrubs, which contribute to an increase in quality and variety of the diet. If the shrubs were unavailable the deer would either starve or resort to less desirable species, resulting in poorer animal condition. Moving to another winter range area would not be a logical alternative because lack of forage is not sufficient reason alone for winter deer to leave their traditional ranges.

The Picabo crucial winter area is unique because the single largest concentration of wintering deer in the ES Area inhabit it, and approximately 45 percent of the range is private land. Because so much of this crucial habitat is privately owned and presently utilized by deer, 322 AUMs have been assigned to this land. No adverse impacts would occur as long as the present use of the private land is continued (grazing with public land under an exchange-of-use agreement). However, if any project were undertaken by the private landowner that would remove winter forage or make it unavailable, there would be a very severe adverse impact on deer. If winter forage on the private land were not available and the animals moved to the adjacent public land, they would be competing for food which has been allocated to other deer or cattle. A radical project which would destroy existing wildlife values on the private land could eliminate the carrying capacity of the area for approximately 275 animals winter long.

The proposed action identifies three unalloted areas comprising 3,648 acres to be established within the crucial Picabo winter range boundaries: Winter Deer, Deerhorn, and Leduck Canyon. The elimination of livestock grazing would result in additional forage being available for wintering animals as well as for the few resident deer that inhabit the three areas yearlong.

The proposed grazing systems would probably not affect winter deer populations. The improved vegetation condition resulting from the grazing treatments could benefit the winter deer habitat, on the assumption that improving the condition of grasses and forbs would not adversely impact the shrubs.

The proposed grazing systems would benefit summer deer populations by increasing the availability of grasses and forbs. The improved understory vegetation would not only provide additional forage but also more cover, thus increasing the opportunity for seclusion for fawning does, etc.

Grazing systems would increase the concentration of livestock within pastures in those allotments previously identified (26 percent of the ES Area). The impacts of this action on deer are presently unknown. Spotlight counts conducted within the ES Area (cooperative study between Idaho Department of Fish & Game and the Shoshone District) indicate that ususally more deer inhabit pastures not currently grazed by cattle. Whether the deer are avoiding the cattle or are selecting the better vegetation conditions has not yet been determined.

The proposed range improvements would, for the most part, beneficially impact both resident and winter deer populations. Water developments (e.g., pipelines and reservoirs) would allow resident deer to increase their distribution or at least reduce the travel distance to and from water. However, adverse impacts could result from water developments in areas not previously having water. New waters would increase livestock grazing on the adjacent areas, resulting in a decline of available forage for deer.

Fences, except the one proposed within the Picabo Allotment, would not significantly impact deer populations. The Picabo fence would run north and south across the middle of the crucial Picabo winter range. The proposed fence location could adversely affect the daily movements of deer back and forth across the range, especially during periods of severe winter weather.

Neither land treatment projects nor stock trail developments would impact deer populations within the ES Area.

The cumulative impacts accruing from the Proposed Action would improve habitat conditions for mule deer, resulting in an estimated 94 percent increase in wintering deer. The populations would expand from the present estimated 1,903 head to approximately 3,700 head after 15 years.

Elk

The allocation of elk forage (614 AUMs) would benefit the elk inhabiting the ES Area. Early spring and late fall livestock grazing would not affect elk because they do not generally use those pastures that would be grazed by livestock during those seasons.

The grazing systems designed for the Hash Spring and North Shoshone Allotments could adversely impact elk. Hash Spring is the major elk summer use area and appears to contain the major calving areas for a minimum of 50 percent of the herd. The proposed Hash Spring grazing system divides the allotment into two pastures. Livestock would be concentrated in one pasture for approximately half the grazing season and then moved to the other pasture for the remainder of the season. Elk and livestock (sheep and cattle) have coexisted for several years in this allotment under an allotment-wide, season-long grazing system. Edgerton (1971) and Lonner (1976) indicate that elk avoid areas used by livestock; however, this response has not occurred to date. It remains to be seen whether this response would manifest itself with increased livestock concentrations and, if it did, what impact it would have. Elk are mobile animals, and if livestock numbers become intolerable they are capable of moving into that part of the allotment unoccupied by livestock. However, cow elk which are giving birth or have just given birth cannot move any great distance without abandoning their young. The degree of impact which the proposed action might produce on the cow and her young is unknown.

It is apparent that elk have selected their use areas based on two criteria: (1) the areas are in fair to good condition and, (2) livestock grazing is light or nonexistent. The grazing systems proposed for the Hash Spring and North Shoshone Allotments would more evenly distribute livestock within pastures and force them into areas that were previously ungrazed or lightly grazed by livestock. The proposed systems would increase the spatial and forage competition between elk and livestock in important elk use areas. The grazing systems would, however, improve the forage conditions allotment-wide and lead to expansion of the existing elk use areas, thus increasing the opportunity for higher population numbers.

The impacts resulting from the development of water would be the same as those described for mule deer.

Fences would not generally impact elk. However, the cross fence proposed for the Hash Spring Allotment would slightly impede the movements of elk within the allotment. The young animals would be impacted the most; however, it appears that they would learn to negotiate the fence.

The small prescribed burn proposed for the Hash Spring Allotment would increase both the quality and quantity of elk forage, thus slightly increasing the allotment's carrying capacity.

As a result of the improved habitat conditions, elk population would be expected to increase from a present estimated level of 80 head to approximately 400 head after 15 years.

Antelope

The allocation of forage for antelope (109 AUMs) would benefit the population by reducing the competition for food that presently exists. Also, the increased quality and quantity of forage (grasses and forbs) expected from the proposed grazing systems would increase the antelope habitat carrying capacity. The improved forage and cover would tend to increase fawn production and survival.

It does not appear that early spring or late fall livestock grazing would significantly impact existing antelope populations. The animals are extremely mobile and appear to range over a very extensive area. Consequently, if conflicts were to occur between livestock and antelope, the antelope would simply move to other equally desirable areas such as rested or lightly grazed pastures. Such areas should be available because of the number of rest-rotation grazing systems (six) proposed within the antelope range.

Water developments would impact antelope in the same manner as they would deer and elk. Development of water in new areas would encourage competition between livestock and antelope. However, it would also allow for the expansion of antelope habitat, thus improving the chances to increase the population numbers.

The proposed fence extending along the southeast boundary of the Timmerman East Allotment could impact the migration of antelope that winter outside the ES Area. The significance of the impact would depend on the final design and specific location of the fence.

The net impacts of the proposed action would benefit antelope and cause an estimated 60 percent increase in animals after 15 years.

Impacts on Small Mammals

No specified amount of forage has been allocated for small mammals. However, 40 percent of the palatable forage and practically 100 percent of the unpalatable vegetation within a pasture would be available for small mammal and bird use. The increased availability of vegetation would improve the quality and quantity of food and cover for the majority of small mammals. This would in turn benefit the predatory populations due to the increased number of prey species.

Early spring livestock use could adversely impact small animals inhabiting the spring ranges. Normally, these species have small home ranges and if they had to compete with livestock for the limited amount of spring forage their populations would suffer. The same is true for animals inhabiting pastures receiving heavier grazing treatments under rest-rotation grazing systems. However, so long as livestock utilization does not exceed 60 percent, the impact would be minimal.

The improved habitat conditions expected from the proposed grazing systems would benefit the populations by increasing their available food and cover.

Water developments would benefit small mammal populations by extending their range into areas where water was previously unavailable. However, it would be critical to maintain the water availability, as proposed, regardless of livestock use. If water were available only when livestock utilized the pasture, it would not be beneficial, and it could be extremely detrimental.

The impacts derived from the land treatment projects would be similar to those discussed under the "General Impacts" section.

Fencing and stock trail development would not affect the small mammal populations significantly.

Impacts on Birds

Sage Grouse

Forage allocations were not specifically made for sage grouse, but it is expected that the Proposed Action would benefit the sage grouse populations by increasing both the quality and quantity of food.

Grazing livestock in the early spring and late fall would not impact sage grouse because at those times the grouse would be principally eating sagebrush, which is abundant. A sage grouse nest-search study conducted in the ES Area concluded that sheep trailing had no significant effect on sage grouse nesting success (Personal Communication, IDF&G 1975).

The proposed grazing systems would benefit sage grouse by increasing the amount of grasses and succulent forbs. Wet areas such as springs and meadows, comprising about 2,200 acres, would not be improved for sage grouse unless they were fenced. Livestock, especially cattle, tend to concentrate on the wet areas, therefore reducing their value for sage grouse. A limited amount of livestock grazing is beneficial, however, because it prevents the vegetation from becoming overgrown and rank.

The proposed range improvements would generally benefit sage grouse. Additional waters would expand the summer and early fall habitat for these birds. Prescribed burns proposed for summer ranges would increase the availability of forbs. No land treatment projects are identified that would impact sage grouse winter or nesting habitat. Neither the stock trails nor the fencing projects would impact these birds.

Chukar Partridge, Hungarian Partridge, Pheasant, Quail, and Dove

The impacts on these birds resulting from the Proposed Action would be similar to those described for sage grouse. The unallotted forage and improved vegetation condition resulting from the grazing systems would improve the habitat conditions by increasing the available food and cover. This would expand habitat, increase populations, and reduce vulnerability to predators.

Spring livestock grazing would produce some adverse impacts, including a reduction in nesting cover and/or food supplies. However, the impacts would probably not be great because the birds normally inhabit areas not susceptible to early grazing. Fall grazing would not impact these birds.

Water developments would benefit the populations by expanding their ranges and/or reducing the travel distance to available water. The remaining range improvements, including fences, stock trails, and land treatments, would not significantly impact these birds. An estimated 60 percent increase in the number of nests produced by upland game birds, including sage grouse, would result from implementation of the proposed action.

Waterfowl

Since waterfowl normally nest within a short distance of water, and livestock tend to concentrate around water source areas, the impacts of the proposed action would be similar to those under the existing situation. Due to the impacts caused by concentrated livestock, vegetation surrounding water areas would not be improved. Consequently, neither the proposed allocation of forage nor the response to the grazing system would improve waterfowl nesting and escape cover.

Rested pastures would provide improved nesting cover the year following rest because of the residual plant cover. However, the benefits resulting from the improved cover would be reduced by the fact that a heavier grazing treatment normally follows the rest treatment. The grazing treatment would reduce the available vegetation and, if this occurred after the birds nested, it could increase the vulnerability of the hen and the eggs to predators, trampling, etc. If the grazing occurred prior to the nesting period, the majority of the birds would not nest in the grazed area.

New reservoirs would enhance the waterfowl habitat by providing additional nesting and resting areas. Reservoirs other than the pit type are proposed to be fenced to exclude livestock, thus providing good cover for nesting birds.

Fencing, stock trails, and land treatments would not significantly impact waterfowl populations.

Threatened, Endangered, and Sensitive Wildlife

The Proposed Action is not anticipated to cause any impacts to the two or three bald eagles that occasionally winter in the ES Area.

The birds winter adjacent to two major water bodies, the Snake River and Pioneer Reservoir, neither of which would be affected by the proposed action.

Sensitive species which did not fall within a group previously discussed include the ferrugious hawk, osprey, pigeon hawk, western burrowing owl, and long-billed curlew. The osprey, ferrugious hawk, and pigeon hawk are rare species within the ES Area, and no impacts resulting from the proposed action would significantly affect these birds.

Burrowing owls, which commonly nest within the ES Area, could be beneficially impacted by the Proposed Action. The increased vegetation would support additional insects and small rodents, etc., which provide the primary source of food for the owls. The only major adverse impact expected from the proposed action would result from the proposed seeding projects. The seeding treatments could result in nesting burrows becoming destroyed. Owls appear to select available burrows located on disturbed sites, which are generally the ones that are rehabilitated. It is apparent that owls use the same burrows, if available, year after year. What is not known, however, is the birds' response when the burrows are not available. Seedings are normally conducted in the fall; consequently, if nest sites were destroyed at that time of year, no birds would be killed.

The remaining sensitive species is the long-billed curlew. It is found only occasionally in the ES Area, and due to low population numbers and nesting and foraging habits, the proposed grazing program would not be expected to significantly impact this bird.

Summary of Wildlife Impacts

The net cumulative impacts resulting from implementation of the Proposed Action would improve the wildlife habitat conditions on approximately 75 percent of the ES Area. The improved conditions, in association with the allocation of big game forage, would lead to an increase in big game populations after 15 years. Mule deer would increase from their present estimated winter number of 1,903 head to an estimated 3,700 head. Elk would increase from 80 head to an estimated 400 head, and antelope would increase approximately 60 percent to an estimated 165 head.

Upland game birds would benefit from the proposal. It has been estimated that the number of nests would increase approximately 60 percent. The increased nests would result from improved understory vegetation conditions which would provide increased amounts of cover for nesting and escape, and increased quality and quantity of available food.

Other animal populations would respond positively to the proposal, although no population estimates have been made.

IMPACTS ON FISHERIES

Streams

If the Proposed Action were implemented, livestock would still have access to streamside areas where they would trample and graze heavily prior to advancing to more distant rangeland. Therefore, any improvement in stream habitat condition resulting from decreased stocking levels or changes in grazing systems would only be slight. The adverse effects of stream habitat damage by livestock on trout populations are conceptualized in Figure 3-1.

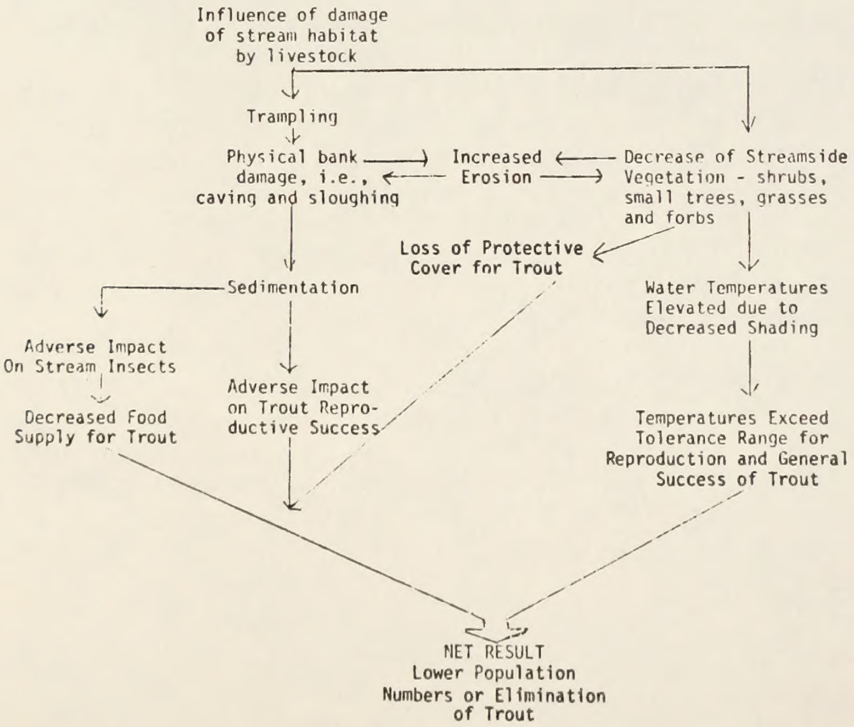

Influence of damage of stream habitat by livestock
Trampling
Physical bank damage, i.e., caving and sloughing
Increased Erosion
Decrease of Streamside Vegetation - shrubs, small trees, grasses and forbs
Loss of Protective Cover for Trout
Sedimentation
Water Temperatures Elevated due to Decreased Shading
Adverse Impact On Stream Insects
Decreased Food Supply for Trout
Adverse Impact on Trout Reproductive Success
Temperatures Exceed Tolerance Range for Reproduction and General Success of Trout
NET RESULT Lower Population Numbers or Elimination of Trout

Figure 3-1. Conceptualized flow chart of adverse effect of stream habitat damage by livestock on trout populations. Source: Armour 1978.

Although rest-rotation or deferred-rotation grazing systems are typically proposed for the major stream watersheds in the ES Area, no change in the aquatic habitat quality condition classes (i.e., from poor to fair or from fair to good) would be expected. Platts, et al. (1977), who summarized deliberations of scientists attending a workshop pertaining to impacts of livestock on wildlife and fish habitat, indicated deferred rotation would not result in habitat conditions other than poor to fair.

Hormay (1970) specifically addressed the benefits of rest-rotation systems, but did not claim significant benefits for fisheries. In fact, Hormay (Personal Correspondence 1976) stated that "vegetation in certain areas, such as meadows and drainage ways, are invariably closely utilized under any stocking rate or system of grazing. Such use may be detrimental to wildlife, esthetic or recreational, or other values. Where this is the case, about the only way to preserve values is to fence the area off from grazing. Reducing livestock or adjusting the grazing season usually will not solve such a problem."

Due to the effects of livestock trampling and heavy utilization on streambanks during pasture use, rest rotation would not materially improve conditions for fish. Boussu (1954) has documented the importance of bank-associated habitat. He found that standing crop poundage of trout decreased approximately 33.3 percent in an area where undercut banks were destroyed, while it increased 19.7 percent in a control section where habitat was left intact.

For most of the streams in the ES Area, even if fish habitat were to improve from poor or fair to good condition, little or no benefit would result for sport fishermen. Streams such as Dry Creek, Hog Creek, and Dry Creek (tributary to the Big Wood River) have flows of only 0.1 - 1.0 cubic feet/second, which are not capable of supporting substantial game fish populations. Consequently, no matter what the condition of the habitat, a significant sport fishery would not exist.

Fencing the upper 2.5 miles of Clover Creek to exclude livestock (refer to Map 1-2) would result in fish habitat of that section of the stream developing from the poor to the good condition class. Such a change would increase stream mileage in the good condition class from 41.2 to 43.7 miles (6 percent), and decrease the poor condition class from 14.9 to 12.4 miles (17 percent). Stream mileage in the fair condition class would remain the same, 13.9 miles.

Reservoirs

The Proposed Action would not be expected to have any significant impact on the aquatic habitat of reservoirs in the ES Area.

IMPACTS ON CULTURAL RESOURCES

Implementation of the proposed action could result in impacts to 262 cultural resource sites, or 87 percent of the 300 known. Of the sites that could be impacted, 25 (Table 3-13) appear eligible for listing on the National Register of Historic Places. The single currently listed National Register property, the Shoshone Historic District, would not be impacted. At least 38 known cultural resource sites on public, State and private lands would not be affected by the proposal.

Impacts to cultural resource sites (prehistoric and historic) consist of changes from their original condition. Because the potential information content of cultural resource resides primarily in their physical structure, alterations in that structure constitute a stage in the erosion of the total potentially recoverable information. Because cultural resources are, by definition, finite and nonrenewable, such alterations are permanent and nonreversible.

The degree of impact to any given cultural resource resulting from implementation of the proposed action would be dependent on two factors: (1) the nature of the cultural resource (its physical attributes and location) and (2) the kind and extent of disturbance. Disturbances could be caused by one or more of five primary activities and three secondary processes that can be accelerated by livestock grazing.

The five primary surface disturbing activities associated with the proposed action are: (1) water developments and maintenance, including necessary access routes; (2) fence and cattleguard construction, including necessary access routes; (3) stock trailing; (4) land treatments; and (5) livestock trampling.

The three sources of secondary disturbances are natural processes often accelerated by livestock grazing. They are: (1) gully, rill, and streambank erosion; (2) sheet erosion; and (3) wind erosion.

An additional source of impact to cultural resource sites in the ES Area is vandalism and the illegal collection of surface remains. This is an ongoing impact, however, and would not be expected to increase or decrease as a result of proposal implementation.

The eight sources of impacts (five primary and three secondary) result in: (1) disturbances to and/or loss of horizontal cultural and natural deposits, including paleoecological data; (2) disturbance to and/or loss of vertical cultural and natural deposits (stratigraphic sequence), including paleoecological data; and (3) disturbances to both horizontal and vertical deposits.

Disturbances to horizontal deposits result in similar impacts to both prehistoric and historic cultural sites. Primarily,

TABLE 3-13

PREDICTED ADVERSE IMPACTS TO POSSIBLE NATIONAL REGISTER CULTURAL RESOURCES IF PROPOSED ACTION IS IMPLEMENTED 1/

Allotment And Site	Trampling	Gully/Rill/ Streambank Erosion	Other Erosion	Proposed Projects	Trailing
Black Canyon					
10CM67			x		
Clover Creek					
10GG96			x		
10GG97		x	x		
10GG98	x		x		
10GG100	x				
Davis Mountain					
10GG148			x		
Dempsey					
10GG47			x		
10GG116		x	x		x
10EL168			x		
ID-05-77-15 (BLM)	x				
Hash Spring					
10CM6	x				x
Indian					
10GG20	x				x
10GG66	x				
10GG75			x		
10GG115	x				
Kelton Road	x	x	x		
King Hill					
Kelton Road		x	x		
Macon Flat					
10CM43	x		x		
North Gooding					
10GG54					x
Pioneer					
10GG120	x	x			
10GG121		x	x	x	
10GG145	x		x		x
Timmerman West					
10BN51			x		x
"101"					
10EL44	x				
Unallotted					
Goodale's Cutoff		x	x		x
Number of Sites Impacted Totals 25	11	7	17	1	8
Percent of Total Possible Eligible Sites 49%	22%	14%	33%	2%	16%

1/ Some sites receive more than one adverse impact.

disturbances to these kinds of deposits can alter an/or destroy recoverable information pertaining to intra-site activity patterns. This occurs through displacement and/or breakage of surface artifacts and features. Such disturbances can result from each of the five primary surface disturbing activities listed above, as well as the three erosional processes which may be accelerated by the primary activities. It should be noted, however, that the construction of fences and cattleguards is less likely than the others to cause such disturbances. The vast majority of known cultural resource sites (85+ percent) in the ES Area are surface sites and would, therefore, be particularly subject to information loss caused by disturbances to the horizontal deposits.

Disturbances to vertical deposits result in information losses pertaining to chronological sequences of past cultural and natural depositional processes (stratigraphy) and can also impact subsurface features and activity areas. Any cultural resource site with a subsurface component may be subject to impact through disturbances to vertical deposits. Such impacts may be generated through any of the five primary and three secondary sources, but the most likely sources are water developments and maintenance; land treatments; gully, rill, and streambank erosion (in those cases where sites occur along streams, river, and gullies). Impacts resulting from the disturbance to vertical deposits would be most likely to occur at sites that are currently undiscovered because they contain no surface components.

Some categories of cultural resource sites would be expected to receive little, if any, impact from implementation of the proposed action. These include the rock art sites, which occur primarily on rock faces (panels) above ground level, and cave/rockshelter sites, which are protected to a degree by their locations in restricted and/or inaccessible locales.

Reduced impacts on cultural resources, especially from livestock trampling, would be expected in those allotments where the proposed initial stocking rate is adjusted downward. Conversely, in those allotments where the proposed initial stocking rate is to be adjusted upwards, impacts to cultural resources would be expected to increase accordingly.

Implementation of the Proposed Action would result in a cessation of impacts on two known significant cultural resource sites, 10EL22 (Clover Creek Site) and ID-05-77-1 (BLM). These sites are located within the proposed protective fencing project for cultural resources (see Map Reference Number 52 on Table 1-3 and Map 1-1).

Summary

The Proposed Action would result in potential impacts (disturbance or destruction) to 87 percent of the 300 known cultural resource sites. Of those which would receive impacts, 25 are significant and of National Register merit. Of the significant sites, 11 would be affected by livestock trampling, 18 by various erosional processes, 8 by livestock trailing, and 1 by other proposed range improvements. Some sites would receive impacts from more than one source (see Table 3-13). Another 237 known sites of lesser significance would also be impacted. Some categories of sites, such as rock art and cave/rockshelters, would not be expected to be significantly affected by the proposal.

At this time the expected damages that could be attributed to the proposed action cannot be accurately quantified due to a lack of site-specific data.

IMPACTS ON VISUAL RESOURCES

Table 3-14, "Potential Visual Impact Summary," displays the contrast ratings for several components of the proposed action. This table summarizes the results of a non-site-specific analytical exercise. According to BLM Manual section 6320.11, the following criteria should be used to determine if a proposed action will be compatible with the Visual Resource Management (VRM) class of the area. (See Table 2-26 and Map 2-12 for definition of VRM classes and application of them to the ES Area, respectively.)

1. Class I: The degree of contrast for one element may not exceed one (weak), and the total contrast rating for any feature must be less than ten. There are no designations of this class within the ES Area.
2. Class II: The degree of contrast for any one element should not exceed two (moderate), and the total contrast rating for any feature may not exceed ten.
3. Class III: The degree of contrast for any one element should not exceed two (moderate), and the total contrast rating for any feature may not exceed sixteen.
4. Class IV: The total contrast rating for any feature should not exceed twenty.
5. Class V: This is an interim classification for rehabilitation or enhancement of an area. An appropriate contrast rating is selected based upon the indicated potential VRM class (II, III, or IV).

The total contrast ratings or "scores" shown on Table 3-14 indicate the relative visual impacts of the various components of the Proposed Actions. Several components could result in contrasts exceeding ten for a particular feature and, therefore, should not be located in areas of VRM Class II. The stock trails and vegeta-

TABLE 3-14

POTENTIAL VISUAL IMPACT SUMMARY

PROPOSED ACTION	FEATURE	CONTRAST RATING*								
		Form (4)		Line (3)		Color (2)		Texture (1)		Total Score
		Contrast	Score	Contrast	Score	Contrast	Score	Contrast	Score	
Grazing Use	Land Surface	0	0	0	0	1	2	0	0	2
	Vegetation	1	4	1	3	1	2	1	1	10
	Structures	0	0	0	0	0	0	0	0	0
	Total		4		3		4		1	12
Water Well & Storage Tank	Land Surface	0	0	0	0	1	2	0	0	2
	Vegetation	1	4	1	3	1	2	1	1	10
	Structures	2	8	1	3	2	4	1	1	16
	Total		12		6		8		2	28
Pipelines & Troughs	Land Surface	0	0	1	3	1	2	1	1	6
	Vegetation	1	4	2	6	2	4	2	2	16
	Structures	1	4	1	3	1	2	1	1	10
	Total		8		12		8		4	32
Spring Developent or Maint.	Land Surface	0	0	1	3	0	0	0	0	3
	Vegetation	1	4	1	3	2	4	1	1	12
	Structures	1	4	1	3	1	2	1	1	10
	Total		8		9		6		2	25
Reservoir Construction or Maintenance	Land Surface	1	4	1	3	2	4	1	1	12
	Vegetation	1	4	1	3	2	4	2	2	13
	Structures	0	0	1	3	1	2	1	1	6
	Total		8		9		10		4	31
Fence Construction	Land Surface	0	0	1	3	1	2	1	1	6
	Vegetation	1	4	2	6	1	2	1	1	13
	Structures	1	4	1	3	1	2	1	1	10
	Total		8		12		6		3	29
Cattleguard Installation	Land Surface	0	0	0	0	0	0	0	0	0
	Vegetation	0	0	0	0	0	0	0	0	0
	Structures	1	4	2	6	1	2	2	2	14
	Total		4		6		2		2	14
Stock Trails	Land Surface	1	4	2	6	2	4	2	2	16
	Vegetation	2	8	2	6	2	4	2	2	20
	Structures	0	0	0	0	0	0	0	0	0
	Total		12		12		8		4	36
Artificial Seeding	Land Surface	1	4	1	3	1	2	2	2	11
	Vegetation	2	8	2	6	2	4	2	2	20
	Structures	0	0	0	0	0	0	0	0	0
	Total		12		9		6		4	31
Prescribed Burning	Land Surface	0	0	0	0	0	0	0	0	0
	Vegetation	2	8	2	6	3	6	2	2	22
	Structures	0	0	0	0	0	0	0	0	0
	Total		8		6		6		2	22
Herbicide Spraying	Land Surface	0	0	0	0	0	0	0	0	0
	Vegetation	3	12	2	6	3	6	2	2	26
	Structures	0	0	0	0	0	0	0	0	0
	Total		12		6		6		2	26
Unscheduled Maint.of all Range Improvements	Land Surface	0	0	1	3	0	0	0	0	3
	Vegetation	0	0	1	3	1	2	1	1	6
	Structures	0	0	0	0	1	2	1	1	3
	Total		0		6		4		2	12

*The Contrast Ratings are based on procedures in BLM Manual 6320, Visual Resource Contrast Rating. The visual elements (form, line, color, and texture) are assigned numerical values of 4, 3, 2, 1, as shown. These values are then multiplied by the corresponding potential contrast of the features (land surface, vegetation, and structures) which would be modified by the Proposed Action. The contrast is rated as "strong," "moderate," "weak," "none" and given a corresponding numerical value of 3, 2, 1, or 0, respectively. The product of the element value and the contrast rating is given as the "score" or visual contrast rating. Scores for each feature and element are added to obtain total scores. The maximum total score possible for a given proposed action would be 90, with the highest scores indicating the greatest potential visual impact.

tion treatments could exceed a score of twenty in the short term on vegetation, but are considered acceptable because of the improvement in the long term. Long-term improvement of range conditions could enhance visual quality by increasing variety and color.

Although the proposed action would produce visual impacts, the impacts would typically be slight. All range improvements would be subject to visual quality constraints (see "Visual Quality" in Chapter 1), and the majority of the ES Area is within VRM Class IV (see Map 2-12), which is not particularly sensitive to visual change.

In summary, if the proposed action were implemented as discussed in Chapter 1, the resultant adverse visual impacts would be relatively insignificant. If vegetation condition were to improve, scenic quality would be increased slightly.

IMPACTS ON RECREATION RESOURCES

Hunting

The proposed action is expected to increase big game numbers substantially within the next fifteen years. If this were to occur, the hunting season for deer would probably be reopened, and seasons for elk and antelope might be established. The beneficial impacts of the proposed action to big game hunting would be directly proportional to the number of animals produced and the number of hunting permits issued.

By providing additional and improved habitat, the populations of upland game, small game, and waterfowl are predicted to increase. The increased populations would support additional hunting, increasing recreational opportunities and enjoyment.

Fishing

Although the proposed action would slightly improve the fishing opportunities in some of the streams and canals, the overall impact on fishing would probably be insignificant. This assessment is based on the fact that the great majority of fishing use in the ES Area occurs in the large reservoirs, major streams, and large canals which already support good populations of fish. These fisheries would not be substantially affected by the proposed action. Future use levels would be affected more by the policies and regulations adopted by the Idaho Department of Fish and Game, including the extent of fish stocking accomplished.

Other Recreation

Impacts of the proposed action upon water sports, rockhounding, off-road vehicle use, sightseeing, and general leisure would be minimal. The reduction in livestock numbers and general improvement in management would tend to improve the aesthetics of the area and enhance almost all recreation activities to a limited degree. New fences would create some inconveniences to public access. Also, if the proposed action were to antagonize local landowners, public access could be restricted on roads which presently do not have easements across private lands.

IMPACTS ON WILDERNESS

Construction of range improvements and completion of land treatment projects would produce scars on the landscape and intrusions of man-made features. If allowed in areas possessing wilderness characteristics, the proposed range improvements and land treatments would obviously have a potential for impairing wilderness values. However, Section 603(c) of the Federal Land Policy and Management Act (FLPMA) requires BLM to manage areas having wilderness characteristics "... in a manner so as not to impair the suitability of such areas for preservation as wilderness" (90 Stat. 2785).

In view of the requirements of FLPMA and the related wilderness constraints incorporated into the proposed action (see "Range Improvement Constraints" in Chapter 1), no wilderness values should be lost or impaired. If areas having wilderness characteristics are identified, any conflicting activites (including construction of range improvements and implementing land treatments) would be restricted until Congress determines if the areas should be designated as wilderness.

IMPACTS ON LIVESTOCK GRAZING

The proposed action includes three principal impact cause agents for the proposed allotments. They are adjustment of stocking rate (forage allocation), implementation of grazing systems, and construction of range improvements. The short- and long-term impacts of each cause agent are identified.

The proposed action also includes protection of certain areas from livestock grazing. The short- and long-term impacts are also identified for these proposed unallotted areas.

Significant impacts are identified in the "Summary" at the end of this section.

Proposed Allotments

There are 42 proposed grazing allotments in the Shoshone ES Area. Forage allocation, resulting in either a downward or upward adjustment in livestock grazing, is proposed for 41 allotments; only 1 allotment, Hash Spring, would continue the present level of grazing. All 42 allotments would have some kind of proposed grazing system. Most allotments have proposed new range improvements.

Forage Allocation

The proposed overall 35 percent downward adjustment in licensed grazing use represents a significant impact on many of the livestock operators using public lands in the ES Area. This reduction in available range forage has socioeconomic implications discussed under "Impacts on Socioeconomic Conditions." The proposed adjustment by allotment is shown in Table 1-6 in Chapter 1. The greatest proposed downward adjustment from average licensed use (1972-1976) is 77 percent while the greatest proposed upward adjustment from licensed use is 320 percent. Table 3-15 shows in greater detail the adjustments in actual livestock grazing that would result from the proposed action (adjustment from average licensed use).

No adjustment is proposed for the Hash Spring Allotment which comprises approximately 1 percent of the ES Area.

Thirty allotments, comprising over 72 percent of the ES Area, would receive some degree of reduction from the five-year average licensed use (1972-1976). Seven allotments, making up less than 3 percent of the ES Area, would require a reduction of less than 30 percent. Thirteen allotments, making up approximately 50 percent of the ES Area, would require a reduction of 31 to 50 percent. Ten allotments, making up approximately 20 percent of the ES Area, would require a reduction of 51 to 77 percent. Ninety-three of the 112 livestock operators would have downward adjustments (see Table 3-17 in "Impacts on Socioeconomics").

Under the proposed action ten allotments, comprising nearly 27 percent of the ES Area, could be stocked heavier than they were during the average licensed use period (1972-1976). Of these, five allotments, making up approximately 17 percent of the ES Area, could have increased stocking rates of between 2 and 50 percent. Five allotments, making up approximately 10 percent of the ES Area, could have increased stocking rates of greater than 51 percent (see Table 3-15).

Nineteen of the 112 livestock operators would not be adversely affected by the proposed adjustments in the level of livestock grazing based on their average licensed use. These operators

TABLE 3-15

IMPACTS OF PROPOSED FORAGE ALLOCATION
BY PERCENT ADJUSTMENT IN STOCKING RATE
FOR PROPOSED ALLOTMENTS

PERCENT ADJUSTMENT FROM AVERAGE LICENSED USE	ALLOTMENT NAME	PUBLIC LAND (ACRES)	PERCENT OF PUBLIC LAND IN ES AREA 1/	AUMS LOST 2/	AUMS GAINED 2/	NUMBER OF LIVESTOCK OPERATORS AFFECTED		
						GRAZE CATTLE ONLY	GRAZE SHEEP ONLY	GRAZE BOTH CATTLE AND SHEEP
DOWNWARD ADJUSTMENT								
1-10 Percent Downward Adjustment Proposed	Spud Patch	3,894	---	25	---	4	0	0
	Tikura	3,643	---	11	---	2	0	0
	Subtotal	7,537	1.3%	36	N/A			
11-20 Percent Downward Adjustment Proposed	None	None	0.0%	None	N/A	0	0	0
21-30 Percent Downward Adjustment Proposed	Compound	457	---	23	---	1	0	0
	Lower Magic	263	---	21	---	1	0	0
	Magic	6,052	---	318	---	3	0	0
	North Slope	661	000	28	---	1	0	0
	The Pasture	918	---	21	---	2	0	0
	Subtotal	8,351	1.5%	411	N/A			
31-40 Percent Downward Adjustment Proposed	Canal	511	---	21	---	1	0	0
	Hill City Branch	687	---	32	---	1	0	0
	North Shoshone	93,628	---	4,584	---	21	6	3
	Struthers	2,392	---	97	---	1	0	0
	Subtotal	97,218	17.2%	4,734	N/A			
41-50 Percent Downward Adjustment Proposed	Black Buttes	49	---	3	---	1	0	0
	Black Canyon	50,555	---	2,071	---	14	1	0
	Clover Creek	42,435	---	1,797	---	5	5	0
	Indian	35,348	---	2,447	---	3	0	1
	Kinzie Butte	8,684	---	606	---	1	1	0
	Macon Flat	38,982	---	2,173	---	10	8	1
	Track	1,974	---	132	---	3	0	0
	"46"	208	---	11	---	1	0	0
	"101"	4,138	---	274	---	1	0	0
	Subtotal	182,373	32.3%	9,514	N/A			
51-60 Percent Downward Adjustment Proposed	Cove Creek	54	---	6	---	1	0	0
	Dempsey	20,014	000	1,501	---	2	1	0
	Fricke	87	---	10	---	1	0	0
	Kime	600	---	54	---	1	0	0
	Picabo	7,870	---	553	---	2	0	0
	Subtotal	28,625	5.1%	2,124	N/A			
61-70 Percent Downward Adjustment Proposed	King Hill	25,368	---	1,874	---	1	0	1
	Rattlesnake	20,281	---	1,316	---	4	0	0
	Ticeska	3,891	---	507	---	5	0	0
	Subtotal	49,540	8.8%	3,697	N/A			
71-77 Percent Downward Adjustment Proposed	Lava	28,000	---	1,824	---	14	0	0
	Pioneer	6,762	---	1,636	---	2	0	0
	Subtotal	34,762	6.2%	3,460	N/A			
TOTAL FOR PROPOSED DOWNWARD ADJUSTMENTS	30 Allotments	408,406	72.4%	23,976	N/A			
UPWARD ADJUSTMENT								
2 Percent Upward Adjustment Proposed	Richfield	22,015	3.9%	N/A	53	5	0	0
11 Percent Upward Adjustment Proposed	Swinging Bridge	2,939	0.5%	N/A	19	0	1	0
18 Percent Upward Adjustment Proposed	Schooler Creek	58	Negligible	N/A	3	1	0	0
20 Percent Upward Adjustment Proposed	Davis Mountain	39,030	6.9%	N/A	692	1	2	0
43 Percent Upward Adjustment Proposed	Timmerman East	28,952	5.1%	N/A	419	0	12	0
60 Percent Upward Adjustment Proposed	North Gooding	41,405	7.3%	N/A	1,406	0	7	0
70 Percent Upward Adjustment Proposed	Springdale	310	0.1%	N/A	16	1	0	0
108 Percent Upward Adjustment Proposed	Timmerman West	14,450	2.6%	N/A	618	0	12	0
130 Percent Upward Adjustment Proposed	Gwin Ranch	487	0.1%	N/A	35	1	0	0
320 Percent Upward Adjustment Proposed	Poison Creek	269	0.1%	N/A	32	0	1	0
TOTAL FOR PROPOSED UPWARD ADJUSTMENTS	10 Allotments	149,915	26.6%	N/A	3,293			
No Adjustment Proposed	Hash Spring	5,746	1.0%	---	---	0	0	1
Unique Situation	Spring Creek	563	0.1%	N/A	90 3/	0	0	2
TOTAL FOR ALL ALLOTMENTS	42 Allotments	564,630	100 %	NET AUM LOSS 20,593		TOTAL OF 112 Operators 4/		

1/ Represents percent of acres by adjustment category, e.g., 1-10%, 31-40%, divided by the total acres within proposed allotments (excludes proposed unallotted areas).

2/ Represents five year (1972-1976) average licensed use minus proposed initial stocking rate from Table 1-6.

3/ The 563 acres are fenced with a large area of private land. The record indicates no license has evern been issued in the past. The proposal is to license the area for livestock use within the surveyed grazing capacity to be used along with the private land.

4/ The columns do not add to 112 operators. Many of the operators, especially those that graze sheep, have grazing privileges in several proposed allotments. This information is meant to display the magnitude of impact not the impact on each individual operator (see "Socioeconomics").

would be allowed the use of more livestock forage under the proposed action than was used over the past several years. The operators and the additional forage they would be allowed are included in Table 3-17 in the "Impacts on Socioeconomics" section.

Increased forage production would be expected over the next 15 years if the proposed action is implemented (see "Impacts on Vegetation, Summary"). The increase, estimated to be 9,451 AUMs (expected total future production, 63,351 AUMs, minus total present production, 53,900 AUMs) could be allocated to livestock at the end of fifteen years providing present big game numbers remain at or near present levels.

Even assuming no future production would be needed to satisfy increased big game forage demand, the 9,451 AUMs gained over the long term under the Proposed Action would not compensate for the immediate short-term reduction of 20,593 AUMs resulting from the proposal (Table 3-15). The long-term impact would, therefore, be a net deficit of at least 11,142 AUMs on the proposed allotments.

The proposed allocation of forage is not without benefit. The proposed stocking rates would generally allow more forage for each grazing animal. Moreover, as vegetation condition improved, livestock would have a greater proportion of highly palatable and desirable forage species. Improved plant vigor would produce more abundant and accessible forage, and the quality of forage would improve. Improved forage quality would be expected to improve daily weight gains in calves and lambs, improve the general health of breeding animals for higher conception and birth rates, and improve general animal vigor, thus improving overall performance and reducing death losses incurred from a wide variety of causes.

If the proposed action is implemented, noxious weeds and poisonous plants would be expected to decrease in abundance over the long term. Improvement in fleece quality in sheep from fewer sticky weed seeds such as cockleburr would be a benefit. Death losses from poisonous plants could decrease over the long term because most poisonings occur on areas depleted of palatable nutritious forage. Such areas would decrease over time.

The comparison of expected improvement in livestock performance with the impacts of livestock grazing adjustments is difficult to quantify. However, some general observations can be made. During a recent one-year drought (1977) which encompassed the ES Area, many livestock operators voluntarily grazed less livestock because of decreased forage availability. Even with the stressful conditions, good to excellent calf weight gains were made. Several operators stated that the per-unit animal performance was superior with fewer numbers even during a dry year than with usual numbers during an average year.

Grazing Systems

The Proposed Action calls for grazing systems that would require livestock to be moved regularly, more often, and in some cases, longer distances than presently. This would compel livestock to adjust to new terrain, water sources, and salt, and/or feed supplement locations. The adjustment process may have short-term effects on livestock performance, causing temporary reductions in weight gains. Rotation grazing systems, however, have been shown to improve livestock performance (Merrill 1954; Waldrip, Parker, and Marion 1967). Over the long term, livestock performance would be expected to improve as vegetation condition improves and livestock become accustomed to being moved regularly.

The proposed grazing systems would require more time and effort than present grazing. The majority of licensees prefer to operate as they have in the past and do not want the introduction of grazing systems that require strict adherence to grazing schedules. Changing the mode of operation, however, is not expected to be a long-term adverse impact to the ES Area because operators would adjust to the new situation over a period of time.

Several of the proposed grazing systems would be on new allotments formed by combining several existing allotments (Map 1-1). Combining existing allotments would significantly alter the present pattern of use, resulting in both adverse and beneficial impacts.

On the adverse side, most allotment combinations would require more work and cooperation from each livestock operator, especially if personal conflicts arose and some individuals chose not to work closely with the group. Agreement would have to be reached on dates for moving livestock from one pasture to another, dates for gathering, and dates for shipping. Increased handling of livestock by ownership separation could cause some weight losses and possibly make livestock harder to handle. Separating livestock belonging to several different operators usually becomes difficult and time consuming. If personal conflicts arose, the working of livestock could degenerate from a group to an individual effort. Livestock management would suffer. The impact from inter-personal conflicts cannot be quantified. This would not be a major adverse impact in the short term, but must be considered in the long term.

The Proposed Action calls for annual spring grazing as a grazing system on six small allotments (Table 1-7). These include Black Buttes, "46", Fricke, Poison Creek, Springdale, and Timmerman West (Mahoney Flat Pasture only) Allotments, and comprise 4,143 acres of public land (less than 1 percent of the ES Area). The proposal also calls for deferment of grazing until a certain prescribed date on four small allotments. These are Cove Creek, North Slope, "101", and Schooler Creek Allotments, and comprise 4,911 acres of public land (less than 1 percent of the ES Area). The proposal would have little impact on existing livestock operations in these allotments except for those resulting from the proposed adjustments in the level of allowable grazing use.

Under the rotational grazing systems outlined in Table 1-7 and shown in greater detail in Table 3-7, the resting of portions of a grazing allotment would concentrate cattle on the nonrested portions. For example, assume livestock numbers are reduced 40 percent, and assume this reduced number are confined to one-third of the allotment during a certain part of the grazing system (e.g., three-treatment rest-rotation or deferred-rotation). The number of animals per unit of area would then nearly double (100 cattle on 1,000 acres equals 1 cow per 10 acres, 60 cattle on 333 acres equals 1 cow per 5.6 acres), despite the reduced numbers.

Water sources would be more heavily used, sometimes causing water shortages. Temporary water shortages at low-volume springs and favored troughs along pipelines are common during hot summer days. This would not usually be a problem with surface waters such as streams, ponds, and reservoirs or with high-volume springs. Livestock operators would be directly affected by livestock concentration because more time would be spent ensuring the availability of water. Because an entire allotment would not be open to livestock, water availability in individual pastures would be crucial. This would constitute an immediate and long-term impact.

When concentrated in a smaller area, cattle may attempt to escape through newly constructed pasture fences until they become used to them. This is a short-term impact and would be expected to become negligible within a year or two after implementation of the grazing system.

Concentrated in use pastures during the first few years of a grazing cycle, livestock would graze less palatable forage than would be consumed under present management where an entire allotment might be available for grazing. Through continual search for the most palatable forage, livestock could experience temporary weight loss. As forage production and quality improves, this impact would become negligible.

Concentration of livestock in use pastures could also cause some loss of livestock from poisonous plants for the first few years of a grazing cycle. This would be an adverse short-term impact until vegetation condition improves as a result of the proposed grazing systems.

Beneficial impacts resulting from livestock concentration in use pastures would include improved vegetation vigor and reproduction on an allotment-wide basis. There would be a more uniform pattern of forage utilization. Overall, the concentration of livestock into use pastures would be a long-term beneficial impact on livestock grazing, resulting from increased available forage.

Some grazing systems would require later turnout dates than presently. This would require holding livestock on private pastures or in feedlots later into the spring. Although the grazing season would be extended into the fall in most instances, this could result in a long-term adverse impact from increased feeding costs. In some cases, general animal health would temporarily suffer from remaining in moist feedlots or pastures longer in the spring. Warmer temperatures increase bacterial and fungal activity and lead to livestock disease problems.

Range Improvements

The impacts on livestock grazing from the construction and use of the proposed range improvements would be generally beneficial.

More watering places and improved water dependability would result from the proposed water developments shown in Table 1-8 and 3-1.

Management facilities, including fences, cattleguards, and stock trails would generally make livestock management easier. The facilities are considered essential to implement the proposed grazing systems so those impacts identified under "Grazing Systems" in this section apply. Fence maintenance represents an additional expense in time and money for livestock operators. Cattleguards would facilitate the movement of ranch vehicles in some allotments without having to open and close gates. They would also reduce the incidence of gates being left open and the resulting livestock scattering. Stock trails would improve accessibility of areas not now easily reached for grazing.

The short-term impact of the proposed land treatments shown on Table 3-1 would be adverse because the areas would have to be protected from grazing until the desired vegetation became established. This would cause cutbacks in grazing use for a minimum of two years. The long-term impact for livestock grazing would be greater forage availability.

Proposed Unallotted Areas

The proposed action calls for 70 tracts of public land totaling 9,518 acres to be unallotted for livestock grazing (Table 1-3). This would cause several impacts.

On the adverse side, 52 tracts totaling 8,596 acres would not be considered for livestock grazing but would be set aside for other uses such as wildlife, recreation, or cultural resource protection. This would result in a loss of 848 AUMs, which would be both a short- and long-term adverse impact.

On the beneficial side, four tracts totaling 297 acres, while not available strictly for livestock grazing, would be used for stock trails, stock driveways, and livestock holding fields. Fourteen tracts totalling 625 acres would be incorporated into proposed allotments sometime within the fifteen-year life of the proposal. Inclusion of the tracts would make an additional 88 AUMs available for livestock grazing.

Summary

Most of the adverse impacts identified in this section are relatively minor and of short-term duration. There are two exceptions.

The proposed rotation grazing systems would require concentrating cattle onto only a portion of the allotment (pasture(s)). This would require very close monitoring of available water in the use pasture(s) to ensure sufficient supplies to meet cattle demand, especially during the hot summer grazing period. If supplies are not sufficient, poor animal performance or even death could result.

The proposed downward adjustment on 30 allotments (comprising nearly three-fourths of the ES Area) would be an adverse long-term impact because 20,593 AUMs grazing use would be lost from proposed allotments, and 848 AUMs would be lost from proposed unallotted areas. Only 9,539 AUMs would be expected from increased production on the proposed allotments (9,451 AUMs) and addition of fourteen unallotted areas to the allotments (88 AUMs). Thus, a net long-term deficit of 11,054 AUMs would remain after fifteen years.

It should be noted that this long-term adverse impact would affect 93 of the 1,072 ranches reporting during the 1974 Census of Agriculture (see Table 2-35). Thus, less than 9 percent of all livestock producers would be affected. Since the five-year (1972-1976) average use of 58,731 AUMs (Table 1-5) represents only about 2.2 percent of the livestock forage requirement of the five-county area (Chapter 2 "Livestock Grazing"), the proposed reduction would not have serious impacts on the total livestock industry. If public land AUMs were decreased by 20,593 (Table 3-15), it would represent only 0.78 percent of the total AUM requirement for the livestock industry in the five-county area.

Most of the beneficial impacts identified would be relatively minor but of long-term duration.

IMPACTS ON TRANSPORTATION

The only impacts of the proposed action on transportation networks would be related to the secondary and unimproved road system. By adding twenty more cattleguards on existing roads, the convenience of public access would be improved. However, many new fences would also be added within the ES Area, and although gates would be provided as described in Chapter 2, some inconvenience would be created especially for off-road vehicle operators or horseback riders not following major roads or trails.

If private landowners become increasingly opposed to the proposed action, they may react by locking more gates on roads across their private property. Many existing roads crossing private property are needed for public and administrative access to public land; therefore, loss of access could restrict both public use and BLM administration of the involved public land.

Population

Population trends and levels would not change significantly as a result of implementation of the proposed action (see "Socioeconomic Conditions" section in Chapter 2).

Employment

The livestock industry would realize a direct loss of eleven jobs as a result of the proposed action. An additional four jobs would be lost to the five-county economy as a secondary impact. These four lost jobs would be spread through the various sectors of the economy. Eight different sectors would be affected (mostly in the form of half-jobs being lost or a part-time job being lost in each sector). These impacts, which are included in Table 3-16, have been calculated using the Dynamic Regional Analysis Model (DYRAM), a computer model developed by the BLM in 1976.

Income

Proposed livestock initial stocking rates total 38,138 AUMs. This represents a total loss of 44,982 AUMs from active Federal grazing qualifications. Individual operator adjustments in active qualifications would range from a loss of 4,488 AUMs to a gain of 137 AUMs. The total loss from average use would be 20,593 AUMs. Individual adjustments in actual use would range from 2,470 AUMs lost to 885 AUMs gained.

Table 3-17 lists each operator in the ES Area and their active qualifications and average actual use. It also shows each operators' AUMs adjustment and percentage changes from both active and average use.

To compensate for reductions in grazing on public land, livestock operators would have to reduce herd size; buy or raise additional hay; convert irrigated cropland to irrigated pastureland; and/or buy or rent additional irrigated or dryland pasture.

The impact of the AUM adjustments would be a reduction in livestock and livestock-related income in the economic study area. The total reduction in income would be $162,891 (reduction in AUMs from average use times dollars of income per AUM). The largest individual loss from average use (2,470 AUMs) would be equivalent to $19,538 in income. The rancher with the largest increase in AUMs over average use (885 AUMs) would gain $7,000 in income. The average loss (185 AUMs) would be $1,463 in income.

These income reductions would create secondary impacts throughout the five-county economic study area. An additional loss of income of $40,550 in the economic study area would occur as a

TABLE 3-16

SECONDARY EMPLOYMENT LOSSES EXPECTED FROM THE PROPOSED ACTION

INDUSTRY	NUMBER OF JOBS
AGRICULTURE	
Livestock (Except Dairy-Poultry)	.4
Other	.2
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	.6
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	.8
TRANSPORTATION AND COMMUNICATION	.3
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	.8
FINANCE, INSURANCE, REAL ESTATE	.2
SERVICES	.3
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	3.6

Source: Bureau of Land Management, Idaho State Office, Dynamic Regional Analysis Model (DYRAM), October 1978

TABLE 3- 17

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY
FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA
UNDER THE PROPOSED ACTION

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS FROM ACTIVE GRAZING QUALIFICATIONS		REQUIRED ADJUSTMENTS FROM FIVE YEAR AVERAGE LICENSED USE		DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Adams, Charlie	122	124	51	-71	-58	-73	-59	6
Alexander, Eugene	105	105	23	-82	-78	-82	-78	17
Allen, Bud	237	290	88	-149	-63	-202	-70	16
Allen, Richard & Sharon	51	31	19	-32	-63	-12	-39	9
Arkoosh & Zidan	3629	2052	1934	-1695	-47	-118	-6	15
Armstrong, Forest	464	385	102	-362	-78	-283	-74	32
Astorquia, Josephine	1606	839	821	-785	-49	-18	-2	21
Baldwin, Clyde	61	36	49	-12	-20	+13	+36	10
Baldwin, J.D.	150	135	45	-105	-70	-90	-67	12
Baldwin, L.W.	417	374	154	-263	-63	-220	-59	14
Bancroft, Paul	514	476	176	-338	-66	-300	-63	42
Bauscher Ranch	807	603	290	-517	-64	-313	-52	15
Bellamy, Don	482	237	207	-275	-57	-30	-13	50
Bilboa, Alex	594	514	313	-281	-47	-201	-39	39
Braun, Gordon	83	83	60	-23	-28	-23	-28	3
Bray, Sterling & Ada	1031	507	351	-680	-66	-156	-31	34
Breckenridge, L.L.	2960	373	1258	-1702	-58	+885	+237	12
Broadie, Lester	261	215	136	-125	-48	-79	-37	14
Brown, Evan J.	326	380	390	+64	+20	+10	+3	38
Brown, John, Inc.	1005	347	539	-466	-46	+192	+55	25
Browning, Charlie	90	27	42	-48	-53	+15	+56	4
Burman Grazing Assn.	815	814	179	-636	-78	-635	-78	14
Butler, Dale T.	483	362	208	-275	-57	-154	-43	23
Byce, James W.	183	208	68	-115	-63	-140	-67	3
Byrum, Gary	272	238	117	-155	-57	-121	-51	14
Calarco Cattle	2912	2459	874	-2038	-70	-1585	-64	24
Campbell L & L	1720	745	738	-982	-57	-7	-1	10
Castle, James C.	88	82	61	-27	-31	-21	-26	13
Chambers, Ferrel	4	1	4	0	0	+3	+300	0
Circle Hanging H	83	71	58	-25	-30	-13	-18	7
Clark, Wayne	876	759	534	-342	-39	-225	-30	18
Coiner & Sons	23	1	15	-8	-35	+14	+1400	1
Connell, Sanford	182	182	40	-142	-78	-142	-78	8
Connell, William	47	46	10	-37	-79	-36	-78	5
Croft Construction Co.	228	141	68	-160	-70	-73	-52	13
Depew, George	30	30	7	-23	-77	-23	-77	1
Double D. Ranch	293	335	351	+58	+20	+16	+5	12
Drum, E.E.	496	320	208	-288	-58	-112	-35	39
Faught, Waldo	39	30	9	-30	-77	-21	-70	7
Faulkner L & L	8329	6023	3841	-4488	-54	-2182	-36	28
Flying Triangle	1302	615	837	-465	-36	+222	+36	12
Fredrickson, J.E.	240	195	146	-94	-39	-49	-25	18
Freeman, J.E.	345	345	76	-269	-78	-269	-78	16
Gardiner, C.W. & Sons	255	254	69	-186	-73	-185	-73	3
Guthrie, Evan	275	209	117	-158	-57	-92	-44	8
Haga, Marguerite	1004	611	397	-607	-60	-214	-35	42
Hansen, C.M.	26	73	52	+26	+100	-21	-29	2
Hansen, Mark	1164	999	404	-760	-65	-595	-60	9
Hess, Leroy	100	98	34	-66	-66	-64	-65	33
Iest, C. Estate	1026	1026	462	-564	-55	-564	-55	8
Johnson, Wendell	694	782	831	+137	+20	+49	+6	12
Jones, Waldo	356	316	150	-206	-58	-166	-53	3
Jones & Sandy	3506	1292	1778	-1728	-49	+486	+38	36
Karstetter, G.W.	138	138	46	-92	-67	-92	-67	3
Kast C K Cattle Co.	3342	3635	1165	-2177	-65	-2470	-68	14
Kast, Mike	173	173	52	-121	-70	-121	-70	16
Kerner, Gilbert	241	230	101	-140	-58	-129	-56	38
Kerner, Oscar	338	316	142	-196	-58	-174	-55	26
Kevan, James	23	23	39	+16	+70	+16	+70	1
Kinney, Victor	413	382	228	-185	-45	-154	-40	13
Krahn, Ben	572	305	210	-362	-63	-95	-31	19

TABLE 3-17 (cont.)

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY
FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA
UNDER THE PROPOSED ACTION

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS FROM ACTIVE GRAZING QUALIFICATIONS		REQUIRED ADJUSTMENTS FROM FIVE YEAR AVERAGE LICENSED USE		DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
LeaVell Cattle Co.	2026	1036	722	-1304	-64	-314	-30	3
Leeper, E.L.	25	25	14	-11	-44	-11	-44	5
Lockwood L & L	373	346	157	-216	-58	-189	-55	18
Luther, Charles	305	225	132	-173	-57	-93	-41	4
M & S Company	116	133	70	-46	-40	-63	-47	1
Meyers, Samuel	15	17	7	-8	-53	-10	-59	1
Miller, Ilene	105	105	41	-64	-61	-64	-61	26
Mink, Inc.	472	422	203	-269	-57	-219	-52	11
Mitchell, Earl	33	33	12	-21	-64	-21	-64	19
Molyneux, A.W.	298	335	357	+59	+20	+22	+7	16
Moody, G. & Sons	869	672	243	-626	-72	-429	-64	41
Nielson, Morris	42	40	19	-23	-55	-21	-53	6
Norman, Karl O.	68	68	47	-21	-31	-21	-31	10
North Fork Ranch	132	1	69	-63	-48	+68	+6800	5
Oneida Farms, Inc.	312	131	218	-94	-30	+27	+66	6
Osborne, Dwight	1697	888	509	-1188	-70	-379	-43	57
Parke, John	476	247	173	-303	-64	-74	-30	38
Patterson, Manning	1649	1097	1081	-568	-34	-16	-1	21
Pauls, Gayland	464	372	200	-264	-57	-172	-46	10
Pendleton, Charles	1200	788	426	-774	-65	-362	-46	43
Phelps, F.F.	2779	2368	796	-1983	-71	-1572	-66	39
Picabo Livestock	1268	899	342	-926	-73	-557	-62	5
Pugmire, Marion	426	334	145	-281	-66	-189	-57	23
Quarter Circle Lazy H	549	581	214	-335	-61	-367	-63	13
Reeder, Glen	90	89	62	-28	-31	-27	-30	11
Reedy, Carrie L.	643	466	180	-463	-72	-286	-61	25
Renner, Lawrence	340	213	95	-245	-72	-118	-55	19
Richtron, Inc.	348	402	417	+69	+20	+15	+4	14
Ritter, James B.	212	121	47	-165	-78	-74	-61	9
Riley, Carl	314	314	69	-245	-78	-245	-78	16
Ruiz, Bernardo	160	1	35	-125	-78	+34	+3400	5
Salmon Falls Sheep Co.	392	263	205	-187	-48	-58	-22	4
Sandy Brothers	612	435	257	-355	-58	-178	-41	22
Sandy, Donald	64	62	27	-37	-58	-35	-56	35
Sant, Evert	639	599	268	-371	-58	-331	-55	34
Scheer, Jack	238	72	77	-161	-68	+5	+7	11
Schmidt Brothers	570	360	171	-399	-70	-189	-52	6
Schoessler, Carl	54	54	15	-39	-72	-39	-72	3
Sliman & Guthrie	676	337	294	-382	-57	-43	-13	19
Sliman Sheep Co.	3751	2468	1807	-1944	-52	-661	-27	26
Sorenson, Gordon	129	131	77	-52	-40	-54	-41	2
Spring Cove Ranch	705	784	191	-514	-73	-593	-76	21
Struthers, Robert J.	253	263	167	-86	-34	-96	-37	* 2/
Stevenson, John	196	185	159	-37	-19	-26	-14	16
Stutzman, Clifford	458	416	192	-266	-58	-224	-54	32
Tews, Lawrence	5	3	2	-3	-60	-1	-33	1
Thomas, Charles	433	279	182	-251	-58	-97	-35	33
Tschannen, Josephine	284	213	97	-187	-66	-116	-54	22
Varin, John	576	502	248	-328	-57	-254	-51	12
Varin, William	510	464	214	-296	-58	-250	-54	28
Vaughn Brothers	123	1	27	-96	-78	+26	+2600	29
Yore Cattle Co.	5253	3740	3560	-1693	-32	-180	-5	29

1/ AUMs and dependency based on the present situation as of January 1978. Allnumbers have been rounded.
2/ Less than one percent.

Source: Bureau of Land Management, Idaho State Office

result of the initial loss of $163,000 in the livestock industry. Income lost by industry is shown in Table 3-18. These would be annual losses of income. The total loss of income, both primary ($163,000 to livestock industry) and secondary ($40,550 to the entire economy), would total $203,550 annually for the economic study area. This compares with a total 1974 five-county income of $172,213,000. Thus, as a result of the Proposed Action, the total short-term loss of income in the five-county economic study area would be approximately 0.1 percent of the total income generated in the area.

Total annual income losses in the livestock industry ($163,000 primary, plus $6,000 secondary) would be $169,000. This compares to the total 1974 regional farm income of $34,856,000. Thus, the losses resulting from the Proposed Action would approximate 0.5 percent of the annual agricultural income in the five-county area.

In the long term, 9,539 AUMs could be restored to grazing use, making a total of 47,677 AUMs available for livestock. This would be 35,443 AUMs below the current active qualifications, and 11,054 AUMs below the 1972-1976 average actual use. Since operators could be licensed for more AUMs in the long term than immediately after implementation of the Proposed Action, income for the livestock operators would be partially restored. This potential increase would be $75,500 annually (9,539 AUMs x $7.91 income/AUM). Other industries in the area would also benefit from this long-term gain by the livestock industry. As a result, the total annual income increase could be as much as $94,300 throughout the economy, including livestock (DYRAM Model, BLM 1978). The net result after fifteen years would be $109,250 reduction ($203,550 less $94,300) in annual income throughout the economy of the five-county area.

Social Values and Attitudes

The proposed action would have several impacts on the social values and attitudes of the ranchers and other residents of the ES Area. Although impossible to predict precisely, one impact could be the selling of some ranches, potentially ending ranching as a way of life for families that have been ranching for as long as two or three generations. The survey of local ranchers (see "Socioeconomic Conditions" section in Chapter 2) shows that: (1) ownership of land and livestock is considered very important, (2) most ranchers would like to maintain their present residences after retirement, (3) they wish to have their ranches inherited by their children, and (4) they prefer the ranching, rural way of life to the urban lifestyle. If ranches were sold, many of these desires or goals would be unattainable.

If the ranches were sold to corporations, thereby resulting in fewer but larger concerns, some other impacts would occur. First, the corporate ownership of ranches does not correlate with

TABLE 3-18

SECONDARY INCOME LOSSES BY INDUSTRY EXPECTED FROM THE PROPOSED ACTION

INDUSTRY	AMOUNT
AGRICULTURE	
Livestock (Except Dairy-Poultry)	$ 5,910
Other	4,580
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	6,150
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	6,150
TRANSPORTATION AND COMMUNICATION	6,030
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	6,030
FINANCE, INSURANCE, REAL ESTATE	2,390
SERVICES	3,310
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	$40,550

Source: Bureau of Land Management, Idaho State Office,
Dynamic Regional Analysis Model (DYRAM),
October 1978

the values and attitudes of the area ranchers. With fewer ranchers in the area, membership in farm, trade, and religious organizations would decline. This could lead to a decline in the effectiveness of these organizations or, in the extreme case, their total loss. Additionally, with fewer ranchers in the area, extension services and/or courses could be reduced. Most ranchers interviewed used local auctions to some extent to market their livestock. With fewer ranchers in the area, the viability of these markets might be threatened.

Another impact of a reduction in grazing privileges would be the necessity for the individual rancher to seek ways to reduce his expenses. This would be accomplished in part by reducing herd sizes and hired help. This in turn would mean a loss of jobs and lifestyle for their workers.

Even if the ranchers do not sell their ranches, there would be an impact on the values and attitudes held by the ranchers. In the interviews, the ranchers identified government intervention and regulation as something they do not want in the ranching industry. The government-imposed adjustments in grazing privileges would represent just such intervention and regulation.

Generally, those livestock operators faced with significant downward adjustments feel the Proposed Action would decrease the value and salability of their ranches as well as disrupting their existing grazing program. This has prompted some ranchers to instigate Congressional inquiries and express attitudes through newspapers and periodicals. The proposed forage allocation is viewed as another example of increased government control of free enterprise.

SUMMARY OF IMPACTS

Implementation of the Proposed Action would result in a wide range of impacts to resources in the ES Area. These impacts are only highlighted below. In-depth analyses are found in the previous sections of this chapter.

Impacts to soils would be primarily beneficial. The estimated future erosion rate for the ES Area would be reduced to 0.95 ac ft/sq mi/yr from the present 1.00 ac ft/sq mi/yr, an overall 5 percent decrease. Cover would be improved and soil productivity would increase, although localized short-term erosional increases would be expected from range improvements and land treatments.

There would be no significant impacts on groundwater supply or on the surface-groundwater relationship. Some reduction in local surface runoff would be expected. No adverse impacts on existing water quality would be expected, but no substantial improvement would be likely in the short term.

Several short- and long-term benefits would accrue to the vegetation resource. In the short term, reduced livestock grazing would leave approximately 16,500,000 more pounds of vegetation in place, thus affording protection against soil erosion and improving ecological site conditions. Forage plant vigor would improve in both the short and long term. In the long term, forage plant vigor and reproductive success would improve on an estimated 87 percent of the public land in the ES Area. Vegetation condition would generally improve in the next fifteen years. Vegetation production allocable to grazing animals would be expected to increase 18 percent in fifteen years. Future vegetation trend (in fifteen years) would be mostly upward, with a substantial decrease in the acreage in downward trend.

Wildlife habitat conditions would improve on approximately 75 percent of the ES Area if the Proposed Action were implemented. Improved conditions and increased big game forage would lead to increases in big game populations. Mule deer would increase approximately 94 percent, elk approximately 500 percent, and antelope approximately 60 percent. There would be an estimated 60 percent increase in the number of upland game bird nests. Although some improvement would be expected for fish habitat conditions, overall impacts to fisheries would not be significant.

Implementation of the Proposed Action would result in disturbance and/or destruction to 261 known cultural resource sites. Of these, 25 are deemed significant (of National Register merit). Some categories of cultural resource sites, e.g., rock art and cave/rockshelters, would not be significantly affected by the proposal.

Impacts to the visual resource would typically be slight. Improvement in vegetation condition in the long term could slightly increase scenic quality by increasing variety and color. Impacts to recreation resources would be minimal. Increased big game populations could support additional hunting in the long term. Due to the requirements of Sections 603(c) of the Federal Land Policy and Management Act of 1976 (FLPMA), and related wilderness interim management constraints incorporated into the Proposed Action, no wilderness values would be lost or impaired.

Beneficial impacts to livestock grazing would be relatively minor but of long-term duration. Adverse impacts would generally be of short-term duration and relatively minor with two notable exceptions: (1) the proposed rotation grazing systems would concentrate cattle into portions of allotments (pastures) and would require close monitoring of water in the use pastures to ensure sufficient supplies for cattle; (2) the proposed downward adjustments in 30 allotments and the removal of grazing from the proposed unallotted areas would result in a long-term forage deficit of 11,054 AUMs. The proposed reductions would not have serious impacts on the total livestock industry in the five-county area.

The livestock industry would have a direct loss of eleven jobs. Individual operators would realize adjustments in actual use ranging from 2,470 AUMs lost to 885 AUMs gained. There would be a total short-term reduction of nearly $163,000 in livestock and livestock-related annual income and secondary losses of over $40,000 in the five-county annual income. In the long-term (fifteen years), operators could regain 9,539 AUMs, which would restore $75,500 of livestock-related income and $18,800 of secondary income. The net long-term reduction in annual income for the five-county economy would be approximately $109,250, which is approximately 0.06 percent of total income generated in the area. Impacts on social values and attitudes cannot be quantified or predicted accurately.

CHAPTER 4

MITIGATING MEASURES NOT INCLUDED IN THE PROPOSED ACTION

This chapter is comprised of two related sections: (1) "Mitigation of Impacts" and (2) "Monitoring and Study Programs." The first section presents the accepted mitigating measures, corresponding impacts that should be mitigated, and expected effectiveness of the measures. The other section identifies the monitoring proposed to evaluate the mitigating measures, and also any proposed studies that are directly related to the proposed action.

MITIGATION OF IMPACTS

Resource headings are used in this section to categorize the proposed mitigation, which consists of: (1) the impacts, (2) the mitigating measures, and (3) the expected effectiveness. The identified adverse impacts (numbered in this section to facilitate referencing) have been brought forward from Chapter 3. The mitigating measures (presented with corresponding numbers following each impact) have been designed to eliminate or reduce the identified adverse impacts. The measures are considered technically feasible and will be carried out or enforced by BLM if the proposed action were to be implemented. Their effectiveness in terms of reduction or elimination of impacts is briefly analyzed following each measure. Any unmitigated impacts, including those for which no mitigating measures have been identified, are discussed in Chapter 5.

Vegetation

Impact No. 1

Early to late spring (4/01-6/15) sheep use in the "rest pastures" (rested from cattle grazing) of allotments having modified rest-rotation and modified deferred-rotation grazing systems would not allow the vegetation on grazed areas to complete its normal life cycle. Rest from defoliation (grazing) would be required for restoration of vegetation vigor, production of seed, and accumulation of litter.

Mitigating Measure No. 1. The specific areas used by cattle within these allotments will be carefully determined. Each sheep operator using the pasture during a "rest" year will be furnished a map showing areas generally not grazed or only lightly grazed by cattle and will be instructed to graze his sheep on those areas. Thus, the area being grazed by both sheep and cattle will be minimized.

Effectiveness No. 1. The effectiveness would vary not only with the allotment but with pastures within allotments. Cattle tend to stay on flat to undulating terrain and/or near water. If cattle distribution in a pasture were good, the effectiveness of the measure would be low. If cattle distribution were poor because of steep terrain or distance from water, the effectiveness of the measure would be high. Quantification is not possible.

Impact No. 2

Herders tend to favor certain locations for sheep bedgrounds. These locations would be used repeatedly by different sheep bands belonging to the same owner or by sheep bands belonging to different owners. Repeated use would result in "sacrifice areas" wherein the vegetation would be severely depleted or destroyed by overgrazing and/or trampling.

Mitigating Measure No. 2. As a stipulation to the license or permit, sheep operators will not be allowed more than seven days use of any new or established bedground during a grazing season. Established bedgrounds within one-quarter mile of available water will be posted and closed for all future use. These will be seeded with adapted perennial grass and forb species. New bedgrounds will be established a minimum of one-quarter mile away from new water developments.

Effectiveness No. 2. The measure would reduce the number of "sacrifice areas" resulting from sheep bedding. Quantification is difficult, but an estimated 50 percent reduction in the number of "sacrifice areas" would be expected (210 acres). Also, the size of the cattle overuse area around new watering places would not be expanded by sheep overuse if sheep areas were kept at least one-quarter mile away from water.

Impact No. 3

The proposed action calls for construction of new water developments, stock trails, and fences. Cattle would tend to overgraze and trample vegetation adjacent to water. They would also tend to overgraze areas along fences, roads, and established stock trails.

Mitigating Measure No. 3. As a stipulation to the license or permit, livestock operators will be required to place salt and/or feed supplements in suitable wooden or rubber bunks a minimum of one-quarter mile away from any surface water accessible to cattle, including ponds, reservoirs, seeps, springs, streams, or livestock drinking troughs. In addition, the salt/supplement bunks will be placed a minimum of one-eighth mile away from roads, improved stock trails, established heavily used stock trails, and fences. Salting locations will be on rock outcrop or rocky soil whenever possible and will not be in swales or valley bottoms. If rocky locations are not available, salting locations will be moved each year at least 300 yards from the previous year's location. After four years of rest a location may be reused.

Effectiveness No. 3. The measure would only be partially effective as cattle behavior cannot be dictated by salt placement alone; however, placing one essential component of their diet away from heavy-use areas is expected to lessen the impact. The measure is expected to result in a 10 to 15 percent reduction in the size of so-called "sacrifice areas" around water (1,540 acres) and a 15 to 20 percent reduction in the size of other overgrazed areas where cattle tend to concentrate (32,600 acres).

Wildlife

Impact No. 4

Early spring grazing would reduce the forage availability for deer, thus reducing their physical condition and increasing their susceptibility to predators and disease.

Mitigating Measure No. 4. Sheep grazing will be deferred until April 16 on the deer winter range areas in the Clover Creek and Indian Allotments, and until May 1 on the deer winter range in the North Shoshone Allotment, by herding the sheep away from these ranges.

Effectiveness No. 4. Deferring livestock grazing within the three allotments would provide additional forage for deer which have spent the previous three to five months on a low quality diet. The increased quality and quantity of forage would allow for an improved animal condition, thus enhancing the opportunities for survival and increased productivity. The measure would be 100 percent effective.

Impact No. 5

Livestock grazing after August 31 in Clover Creek, Davis Mountain, Dempsey, Indian, King Hill, and North Shoshone Allotments would result in a decrease in available palatable shrubs for wintering deer. The animals' condition would be reduced during the critical wintering period, their productive capabilities inhibited, and survival rates decreased.

Mitigating Measure No. 5. Fall livestock grazing will be terminated if utilization exceeds 40 percent of the current annual growth on palatable shrubs within deer winter ranges. (See "Studies" section below for explanation of procedures to determine livestock utilization.)

Effectiveness No. 5. The measure would ensure that a minimum of 60 percent of the current annual growth of palatable shrubs would be available for deer. The increased amount of forage would provide a higher quality diet for deer, thus increasing their body condition and productive capabilities.

Impact No. 6

The proposed fence that would run north and south through the Picabo crucial winter range could impede the daily movement of deer to and from food and cover.

Mitigating Measure No. 6. The fence proposed for construction within the Picabo crucial winter range will be a three-wire fence with a smooth bottom wire. It will be located so as not to act as a snow fence impeding the daily movement of deer.

Effectiveness No. 6. The measure is estimated to be 95 percent effective in ensuring that the daily movements of deer would not be impeded and that there would be no increase in deer mortality because of inadequate food or cover.

Impact No. 7

An improperly located and constructed fence along the southeastern boundary of the proposed Timmerman East Allotment could impede the migrational movements of antelope that winter outside the ES Area.

Mitigating Measure No. 7. Construct a three-wire fence with a smooth bottom wire and locate it in such a way that it will not impede antelope movements to and from their winter range.

Effectiveness No. 7. The measure would ensure (95 percent effective) that routes to and from the summer ranges would remain availabe and that antelope mortality would not be increased.

Impact No. 8

Burrowing owl nest sites located on proposed seeding areas would be destroyed by the seeding treatments.

Mitigating Measure No. 8. All proposed seedings will be inventoried during the spring nesting period and all active nest sites will be flagged to prevent their destruction by the seeding equipment.

Effectiveness No. 8. The identification of the active nest sites would prevent approximately 95 percent of the sites from being destroyed.

Cultural Resources

Impact No. 9

Livestock trampling would lead to horizontal and vertical erosion of cultural resource sites and breakage and displacement of artifacts.

Mitigating Measure No. 9. To avoid excessive trampling, salt and/or supplements will not be placed within one-quarter mile of known cultural resource sites of National Register significance.

Effectiveness No. 9. It is estimated that approximately 75 percent of the erosion caused by cattle-trampling on cultural resource sites would be eliminated if salt and/or supplements for livestock were located at least a quarter mile from the sites. This would confine trampling to areas where cultural resource sites are less likely to occur. Trampling impacts and the resulting erosional impacts would not be completely eliminated since all cultural resource site locations are not presently known.

Impact No. 10

Livestock trailing across cultural resource sites would damage them by trampling, thus compromising the sites' integrity.

Mitigating Measure No. 10. No trailing permits will be allowed that would cross known cultural resource sites or historic trails.

Effectiveness No. 10. Disallowing trailing permits across cultural resource sites and historic trails would effectively eliminate an estimated 75 percent of the trampling damage. Some trampling and erosional impacts would still be expected to occur during the grazing season(s) as livestock searched for forage. This use could not be effectively controlled.

Impact No. 11

Construction of range improvements and vehicle access could cause displacement and destruction of artifacts and destroy undiscovered cultural resource sites that may be in construction areas.

Mitigating Measure No. 11A. A "106 compliance statement" (see Glossary) will be prepared and submitted to the State Historic Preservation Officer and National Advisory Council on Historic Preservation covering the construction of range improvements that could adversely impact sites eligible for the National Register of Historic Places. Recommendations proposed by the Advisory Council will be adopted for any National Register eligible site discovered prior to project construction. In the event that significant cultural values are discovered during project construction, the District Archaeologist will be notified and he will then prepare a 106 compliance statement.

Effectiveness No. 11A. Preparation of a 106 compliance statement would inform the Advisory Council on Historic Preservation as to the nature of the proposed action, its effect on significant cultural resources, and possible means of mitigating the effect. Effectiveness of mitigating adverse impacts would range from an estimated 10 percent for such things as fence construction across an historic trail to 100 percent for fencing a site near water developments. Based on the 106 statement, a memorandum of agreement between the BLM and Advisory Council on Historic Preservation would include measures to ensure the greatest possible protection for cultural resources from the effects of the proposed action.

Mitigating Measure No. 11B. Equipment-access routes will be surveyed and staked in concert with cultural resource reconnaissance to ensure that cultural resource sites are not transected.

Effectiveness No. 11B. Surveying and staking equipment access routes in concert with cultural resource reconnaissance would be 100 percent effective, because access routes would then avoid cultural resource sites.

Impact No. 12

In many instances, the cultural resource values of an area are unknown or unidentified. Potential exists for these unknown values to be destroyed upon construction of water development projects.

Mitigating Measure No. 12. All proposed water development projects, including new access roads and trails, will be inspected by a BLM or non-BLM professional archaeologist prior to construction to determine if any cultural resource values are present. Additional mitigating measures, including avoidance, total surface collection, test excavation, salvage, or others appropriate, will be initiated to protect any cultural resources where the values would be damaged or destroyed, or where a site's integrity would be compromised. If cultural resource values are discovered during construction, work will be halted and the District Archaeologist will be notified. He will then recommend and initiate proper mitigating measures.

Effectiveness No. 12. On-the-ground inspections of all proposed water development projects by a BLM or non-BLM professional archaeologist would prevent the destruction of any cultural resource values which might be present. As inventories of these values are incomplete, many are presently unknown. However, even destruction of unidentified values by construction-related activities should be minimized.

Impact No. 13

Livestock trampling and vehicle access near spring developments would lead to erosion of undiscovered cultural resource sites and subsequent displacement and/or breakage of artifacts.

Mitigating Measure No. 13. Size of proposed fenced areas around springs will be dependent on potential size of cultural resource sites.

Effectiveness No. 13. Protection of cultural resource sites by fencing around springs would serve to prevent livestock trampling and thus protect the cultural resource values. Fencing a larger area to include the entire cultural resource site would ensure proper protection of the site.

Impact No. 14

Fence construction and maintenance activities along with livestock trampling would displace and/or destroy undiscovered cultural resource sites.

Mitigating Measure No. 14. Intensive cultural resource survey of specific fence lines will be performed prior to construction so that changes in routes can be made to avoid impacts on cultural resource values. Where avoidance by rerouting is not feasible, necessary archaeological salvage will be performed.

Effectiveness No. 14. On-the-ground inspections of proposed fence lines by an archaeologist prior to construction would locate previously undiscovered cultural resource sites. Providing that rerouting of fence lines were feasible, this measure would be 100 percent effective. Where such rerouting were not feasible, salvage operations could realistically provide no more than 50 to 75 percent mitigation.

Impact No. 15

Artificial seeding by standard or deep-furrow rangeland drills would displace and/or destroy undiscovered cultural resource sites.

Mitigating Measure No. 15. Intensive cultural resource inventory will be performed prior to seeding to identify cultural values and mitigate impacts to them through avoidance. If avoidance is not feasible, necessary archaeological salvage will be accomplished.

Effectiveness No. 15. Intensive cultural resource inventory conducted prior to seeding would serve to identify any cultural values present. If avoidance of sites were feasible, this measure would be 100 percent effective. If avoidance were not feasible, archaeological salvage could not realistically provide more than 50 to 75 percent mitigation.

Recreation

Impact No. 16

Proposed increases in fencing would slightly restrict general public access, and possible adverse public reaction to the proposed grazing management could result in private landowners blocking public access across their property.

Mitigating Measure No. 16. Any unnecessary fences will be removed as soon as possible. The Shoshone District's easement acquisition program will be accelerated to ensure continued public access on important roads crossing private lands.

Effectiveness No. 16. Timely removal of unnecessary fences would eliminate a minor source of inconvenience and irritation to the public. Where easements could be obtained across private land, public access would be ensured.

Livestock Grazing

Impact No. 17

The proposed rotation grazing systems would require concentrating cattle into portions of allotments (pastures). This would require very close monitoring of available water in the use pastures to ensure that supplies are sufficient to meet cattle demand, especially during the hot summer grazing period. If supplies are not sufficient, poor animal performance or even death could result.

Mitigating Measure No. 17. A stipulation will be added to the grazing license or permit requiring that inspections be made at least every three days during the grazing period by the livestock operator(s), or a designated representative, of all watering facilities within prescribed use pastures. If problems are encountered or foreseen, the appropriate BLM Area Manager will be informed as soon as possible.

If chronic water problems are encountered in a given area, hauling water, redesigning existing water developments, or constructing additional water facilities will be necessary.

Effectiveness No. 17. The mitigating measure would be 90 to 100 percent effective.

MONITORING AND STUDY PROGRAMS

Monitoring

To ensure that the mitigation discussed above is effective in accomplishing the intended reduction or elimination of impacts, the following monitoring actions will be carried out.

Vegetation

Vegetation response to the proposed mitigating measures will be monitored as an integral part of the studies of ecological site production, actual use, utilization, and trend (see "Studies" section below). Also, periodic field inspections will include observation of compliance with grazing license stipulations.

Wildlife

Spring sheep grazing on deer winter ranges will be monitored annually to evaluate any livestock-wildlife conflicts. Livestock grazing of shrubs in the fall on deer winter ranges will be monitored to ensure that utilization of current annual growth on palatable shrubs does not exceed 40 percent (also see "Studies" section below). Fences that could impact big game will be inspected during the important use periods following construction to determine if further modifications are needed. Seeding operations will be monitored during the actual drilling to make sure that flagged burrowing owl nest sites are not disturbed.

Cultural Resources

A cultural resources monitoring program will be initiated to ensure that implementation of the proposed action will not have a cumulative impact on cultural resource values that go unnoticed until too late for mitigation.

The monitoring program will be implemented in two problem areas:

1. All sites identified as potentially eligible for nomination to the National Register of Historic Places will be visited annually. A log will be maintained on any cumulative impacts on each site and 106 procedures followed where adverse impacts are identified.
2. To broaden knowledge of the cultural resources of the area and identify sites (and/or districts) which are eligible for nomination to the National Register (or otherwise significant), a continuing cultural resource inventory will be undertaken. This inventory will expand upon the sample already inventoried.

Both aspects of the monitoring program may result in the collection of data which will require additional mitigating measures including, but not necessarily restricted to, grazing exclusion (fencing), adjustments in project locations, and archaeological salvage.

Recreation

The potential for removing existing fences that would no longer be needed will be reviewed whenever a new fencing project is programed. Public access easement needs will be monitored in conjunction with continual updating of the Shoshone District's Transportation Plan.

Livestock Grazing

Existing watering facilities will be regularly monitored by the livestock operators. Additionally, BLM personnel will inspect use pastures during the grazing period to evaluate the need for additional water developments.

Studies

Studies will be conducted to determine if the proposed action is meeting the established objectives (see Chapter 1). The proposed studies will include analysis of climate, soil compaction and erosion, water quality, vegetation production and trend, forage utilization by livestock and wildlife, wildlife use of watering facilities, and livestock grazing actual use.

Climate

A climatic analysis and summary will be conducted each year for each of the eight weather stations located in or adajcent to the ES

Area. This data will be correlated with production, trend, and utilization studies to help evaluate the various grazing systems and objectives.

Soils

In conjunction with trend and condition studies on key areas within the ES Area, erosion condition class and bulk density determinations will be made. Form 7310-12, Determination of Erosion Condition Class, will be completed every other year to assess erosion conditions. Soil samples of surface horizons will be taken every five years at selected key areas to determine bulk density. This will give an indication of changes in soil compaction.

Estimates and/or direct measurements of erosion rates will be gathered for sheet erosion and channel erosion in areas with severe erosion problems. Areas with severe sheet erosion problems are located in the following allotments: Black Canyon, Clover Creek, Davis Mountain, Dempsey, Indian, King Hill, Kinzie Butte, Picabo Cattle, Rattlesnake, and Spud Patch. Head cutting and stream bank erosion is a serious problem along the following major drainages: Black Canyon Creek, Clover Creek, Dempsey Creek, Dry Creek, Four Mile Creek, Hog Creek, and Preacher Creek. The Musgrave Equation will be used for estimates, and erosion transects and erosion pins will be used for direct measurements of sheet erosion. These determinations will be made every five years. Channel erosion will be estimated by field measurements to obtain an average annual growth rate.

All seeding and brush control treatments will be checked after the first growing season following treatment to determine success or failure and to evaluate any unexpected impacts on soils.

Water Quality

Water quality monitoring stations will be established along major water courses to determine changes in flows, sedimentation, temperatures, pH, bacterial counts, and basic chemistry.

Vegetation

Ecological Site Production. Studies will be conducted to determine total yearly production by species on selected ecological sites located in key areas of the ES Area. Selected relic areas located within or adjacent to the ES Area will also be monitored. These would include the Shoshone and Carey Kipukas (two relic areas surrounded by recent lava flows and inaccessible to livestock). Twelve years of production data has already been collected from the Carey Kipuka. Production studies will be conducted annually by BLM personnel. They will provide current-year production data and generate long-term averages for comparison of data. This data, correlated with climatic data, will be used to evaluate stocking rate balance with carrying capacity, to indicate trend by species condition, and to better define the potential of the various ecological sites. BLM's Soils Vegetation Inventory Method or SCS's Range Site Inventory procedures will be used in gathering production data.

Vegetation Trend. Studies will be conducted annually to identify any upward or downward trend and degree of change in the range condition. The data collected will provide the basis for prescribing appropriate management action to arrest any downward trend. Trend studies are also used in combination with other studies to evaluate allotment management plans and their grazing systems.

Permanent trend plots will be read and/or photographed annually by BLM personnel. The trend studies will be done in key areas on each allotment grazed by livestock.

Utilization. Studies will be conducted to identify the amount of forage used by all herbivores. In conjunction with the other studies, this data will provide a basis to determine whether livestock stocking rates should be adjusted, and the degree of adjustment. These studies will be conducted by BLM personnel several times during, and at the close of, the livestock grazing season in each allotment. The key forage plant method will be used. This is an ocular method for estimating the degree of utilization of key forage plants.

Terrestrial Wildlife

In addition to the vegetation studies described above, browse utilization transects (twig length measurement method) will be used to identify the percent utilization by livestock and mule deer in deer winter ranges. If livestock use exceeds the accepted 40 percent utilization three out of five years, the grazing use will be adjusted in these areas.

Wildlife use of proposed water developments will be recorded by BLM personnel during regular water facility inspections. Data will be gathered regarding species, approximate numbers, and frequency of use. This information will be used to determine which developments to keep operating during dry seasons when livestock are not using the area.

Livestock Grazing

"Actual Use" studies will be conducted to determine and monitor the actual grazing use of the ES Area by livestock. Actual use data will provide (in most cases) the basis for billing the livestock operators for livestock use.

Several data sources will be utilized:

1. Livestock operators will be requested (or required, if under an allotment management plan) to submit actual use figures to BLM.
2. BLM personnel will count and document actual livestock use as a part of their regular range supervision duties.
3. Other sources such as Idaho Department of Fish and Game records or shearing pen counts may be sometimes used.

CHAPTER 5

ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

This chapter describes the adverse impacts identified in Chapter 3 that would not be mitigated (or would be only partially mitigated) by the measures discussed in Chapter 4. Unavoidable adverse impacts are those that would still occur if the Proposed Action were implemented as modified by the mitigating measures.

SOILS

Several unavoidable adverse impacts would result from implementing the Proposed Action. Soil compaction and/or erosion would continue to occur in areas of livestock concentration, such as near watering facilities, along stock trails, and in valley bottoms.

Approximately 83 acres stripped of vegetation during construction of water developments and management facilities would undergo an estimated 600 percent increase in erosion rates until reseeded areas reestablish (generally two years). About 178 acres (33 acres due to construction of stock trails and reservoirs and 145 acres of "sacrifice areas") would have erosion rates six times the present rate in the long term because of trampling, compaction, and/or lack of cover.

Land treatments on 5,852 acres would have unavoidable short-term impacts on soils by exposing them to wind and water erosion. Erosion rates would increase 60-300 percent, depending on the kind of treatment and soils.

WATER RESOURCES

Although the Proposed Action would generally improve watershed conditions, sedimentation and siltation of stream bottoms would continue where livestock grazing occurred along streambanks with unrestricted access (about 26 miles). Overall sedimentation and chemical and bacterial water quality would continue near present levels because little change would be expected in soil loss and runoff. Lack of specific sedimentation and bacteriological data prohibits more precise quantification.

VEGETATION

Five allotments have proposed grazing systems (on the entire allotment or portion thereof), totaling 115,132 acres of public land or 20 percent of the ES Area total, that would adversely affect a wide variety of vegetation, although the impact would be especially pronounced for riparian vegetation. Two of these, Davis Mountain and Timmerman East, call for increases in livestock stocking rates of 20 percent and 48 percent, respectively. The other three, King Hill, Macon Flat, and Picabo, have proposed downward adjustments in stocking rates of 62, 46, and 57 percent, respectively. Even with the substantial downward adjustments, the forage plants on grazed areas would not be allowed sufficient rest during critical growing periods. The unmitigated impacts for each of the five allotments are discussed below.

Davis Mountain Allotment

The single growing season of rest provided by the proposed grazing system would not be sufficient to restore plant vigor, seed production, and litter accumulation following two years of spring grazing on 13,475 acres of suitable public land (approximately 33 percent of the public land in the allotment).

King Hill Allotment

The proposed grazing system calls for two of the three pastures to be grazed during the most critical spring growing season. One pasture would be rested; but vigor, seed production, and litter accumulation would be less than normal after a single season of rest following two years of grazing in late spring and early summer. The vegetation on areas easily accessible to cattle, estimated at 8,100 acres (32 percent of the public land in the allotment) would be adversely affected.

Macon Flat Allotment

The proposed grazing system calls for two of the three pastures to be grazed during the most critical spring growing season and then grazed again during the fall. One pasture would be rested; but plant vigor, seed production, and litter accumulation would be less than normal following two years of combined spring/fall grazing. The vegetation on areas easily accessible to livestock, estimated at 9,500 acres (25 percent of the 38,982 acres of public land in the allotment), would be adversely affected.

Compounding the problem with the grazing system is the proposed grazing use beyond the allowable livestock stocking rate (based on the 1976 vegetation inventory). The proposal calls for stocking each of the two use pastures to harvest 1,253 AUMs. However, one pasture would be overstocked by 3 percent, one would be overstocked by 10 percent, and one would be overstocked by 20 percent.

Picabo Allotment

The proposed grazing system calls for two of the five pastures to be grazed during the most critical spring growing season and two pastures to be grazed during the less critical summer growing period. One pasture would be rested; but vigor, seed production, and litter accumulation would be much less than normal on grazed areas following four years of grazing during active growing periods. The vegetation on areas easily accessible to cattle, estimated at 1,950 acres (25 percent of the 7,870 acres of public land in the allotment) would be adversely affected.

One pasture would be 13 percent overstocked (based on the 1976 vegetation inventory) four out of five years.

Timmerman East Allotment

The proposed grazing system calls for two pastures to be grazed three consecutive years during the critical growing period. The pasture rested from cattle use would be grazed by sheep during both the critical spring season and during the fall and would, therefore, never receive rest from grazing. Two other pastures would be grazed three consecutive years during the critical growing period. But one pasture would receive complete rest from grazing every fourth year. Vigor, seed production, and litter accumulation would be much less than normal following either three or four years of grazing during critical growing periods in all four pastures. Vegetation would be adversely affected on the entire 28,952 acres of public land in the allotment.

Resolution of Unmitigated Impacts

The impacts identified through the analysis process in Chapter 3 were important enough to require a modification of the Proposed Action for these five allotments. Mitigation of the identified adverse affects on the vegetation resource forms the basis for Alternative 5, Modified Proposal.

TERRESTRIAL WILDLIFE

There would be an increase in competition between livestock and wildlife for both forage and space in five allotments (26 percent of the ES Area) if the Proposed Action were implemented. Allotments involved would include Hash Spring, Gwin Ranch, North Shoshone, Timmerman East, and Timmerman West. The increased competition would be the result of implementing rest-rotation or deferred-rotation grazing systems, which require pasture divisions and result in more concentrated use. Although wildlife, for the most part, are quite mobile and could usually move to other pastures not being used by livestock, an unquantifiable stress element would be present that could effect the freemoving ability of these creatures in the areas involved and, in the long term, could affect population numbers.

If prescribed burning were conducted in the spring (3/15 - 6/0) to remove dense sagebrush stands in the Lava and Hash Spring Allotments, the young and/or nests of many small mammals and birds which nest above the ground would be destroyed. Acreage involved would be 4,000 in the Lava Allotment and 40 in the Hash Spring Allotment. The number of animals or nests that would be destroyed cannot be quantified with any degree of accuracy.

In the Picabo Allotment, 322 AUMs for deer winter use would be assigned to private lands that wintering deer actually use presently. If the landowner were to make these AUMs unavailable, approximately 275 deer would be without adequate winter forage.

FISHERIES

Approximately 37 percent (26 miles) of the stream habitat within the ES Area would remain in poor to fair condition. The streams' limited fishery potential would not improve because of the poor habitat conditions that would continue under the Proposed Action.

CULTURAL RESOURCES

Lack of data concerning the effects of grazing management and associated projects and activities makes the quantification of unavoidable adverse impacts on cultural resources difficult.

Trampling by livestock and concomitant erosion during the short term would result in unavoidable impacts to cultural resource sites. The effects of trampling and erosion would gradually decrease as vegetation cover moved toward range potential, but the impacts occurring in the intervening period would be permanent.

Access along fences and to range improvement projects would have an impact on cultural resource sites through exposure of them to the public. Such exposure increases the potential for vandalism.

Breakage and displacement of artifacts from livestock trampling around heavy concentration areas would continue to severely affect sites not discovered during cultural resource clearance activities.

Damage to subsurface sites which are not discovered during project survey and clearance could occur during the construction of water-related management facilties. Whatever portion of the sites receives damage must be considered permanently lost. Archaeological salvage could be performed on remaining portions of the site; but this, too, is an unavoidable adverse impact because excavation activites destroy a site and eliminate its availability to future research, which could conceivably be based on more sophisticated designs and techniques.

VISUAL RESOURCES

The proposed land treatments would result in short-term disturbance of the land surface and vegetation. There would be no adverse long-term impacts resulting from these treatments.

Range improvements would add certain intrusive structures to the landscapes; however, the impact on visual resources, as a whole, would be slight. The residual impacts would be long term in nature but within the quality standards established for the visual resource management class within which they lie (see "Range Improvement Constraints" section in Chapter 1).

RECREATION RESOURCES

In spite of proposed provisions for cattleguards and gates in Chapter 1, and additional mitigating measures included in Chapter 4, fences would create additional obstructions to public access.

As a result, horseback riders and vehicle operators traveling off the main roads would experience an inconvenience, which cannot be quantified.

LIVESTOCK GRAZING

The proposed downward adjustment in livestock grazing from average licensed use (1972-1976) of 20,593 AUMs on proposed allotments and 848 AUMs on proposed unallotted areas would be a long-term unmitigated impact. Only 9,451 AUMs would be expected from increased future production on the proposed allotments. Only 88 AUMs would be added to the allotments from those unallotted areas identified for eventual inclusion in allotments by fencing. Thus, a net long-term deficit from average licensed use of at least 11,045 AUMs would remain after fifteen years. This estimate of the long-term deficit represents the minimum expected impact to livestock grazing because additional forage that might be needed for future big game populations was not subtracted. If more forage is required for increased big game numbers, the long-term deficit of available livestock forage would be greater than 11,054 AUMs.

SOCIOECONOMIC CONDITIONS

The impacts on employment and income discussed and analyzed in Chapter 3 would be unavoidable if the proposed action were implemented. These include:

1. Eleven jobs would be lost in the livestock industry and four others in the five-county economy.
2. Livestock operators' active qualified demand would decrease 4,982 AUMs, and active use would decrease 20,593 AUMs.
3. Income lost by the livestock industry (direct) would amount to $163,000. Income lost by the five-county economy would be $40,550.

All the impacts on social values and attitudes discussed in Chapter 3 would also be unavoidable. These impacts, which would be long term, include:

1. Ranches that might be sold would end a rural way of life for those individuals involved.

2. A reduction in the number of ranches could reduce membership in farm, trade, and religious organizations.
3. Attitudes of the involved livestock operators toward the public and government could be adversely affected.

CHAPTER 6

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

For purposes of analysis in this chapter, "short term" refers to the fifteen-year period beginning when the proposed action is started. The short term includes both the five-year period when the proposed action would be implemented, and the ten years following. The impacts of the proposed forage allocation, grazing systems, range improvements, and protection of certain areas from grazing would be very evident during this time period. By the end of the short term the achievable objectives of the proposed action would have been met. The period of time beyond the first fifteen years is called the "long term". Generally, the long term refers to a second fifteen-year time frame, although it may continue longer in some instances. Although the achievable objectives would have been met before the long term, impacts of the proposed action, both beneficial and adverse, would still occur.

SOILS

As a result of increased vegetation cover, soil erosion would decrease 5 percent in the short term from 1.00 acre feet/square mile/year (ac ft/sq mi/yr), which is high, to 0.95 ac ft/sq mi/yr. In the long term, erosion would be further reduced a comparable percentage to approximately 0.90 ac ft/sq mi/yr, which would still be a high rate of erosion.

WATER RESOURCES

Short-term changes may alter water resources; however, long-term changes are more applicable to the resource and would reflect short-term impacts. Generally watershed conditions would be expected to improve as a result of increasing vegetation cover and a decreased soil erosion rate. Local surface runoff may be reduced; however, water yield would not be expected to change. Reduction of surface runoff may buffer the watersheds against flood impacts by reducing the frequency of flood events. This reduction, however, would probably have no direct benefit but rather would help minimize associated problems such as sedimentation problems in the long term. The significance of such reductions on water quality cannot be determined since no data exists to relate the levels of sedimentation to impacts on water quality.

Overall water resources would be expected to benefit in both the short and long term as a result of implementing the Proposed Action.

VEGETATION

At the end of fifteen years (short term), vegetation production allocable as forage to livestock and big game would have increased from 53,900 AUMs (43,120,000 pounds air-dried forage) to 63,351 AUMs (50,680,800 pounds), an 18 percent gain. Production is expected to increase slowly beyond fifteen years. Release from the present grazing pressure would result in the most rapid increase in the rate of production during the first years. Even though the rate of increase would be slower, an estimated 10 percent more vegetation production would be expected at the end of the second fifteen-year period. Thus, in 30 years 69,690 AUMs (55,749,000 pounds) would be expected with the Proposed Action.

Implementation of the grazing systems would cause temporary loss of plant vigor, seed production and litter accumulation by concentrating livestock into smaller use areas, but the net effect after fifteen years would be vegetation improvement. This process is expected to continue over the long term, but with reduced immediate impact from grazing use. Improved plant vigor, seed production, and litter accumulation from systematic rest during all or part of the growing season would make grazing less stressful on forage plants in the long term.

Construction of the proposed range improvements and their physical presence would cause an estimated loss of 220 acres where vegetation would otherwise be productive. Though these acres would have been "sacrificed", nearly all other acres would have improved vegetation production and condition as a result of the range improvements.

Vegetation condition improvement is expected over both the short and long term. After the first fifteen years (short term) a total gain of 7,144 acres is expected in the category "seedings" (defined as having greater than 15 percent production by weight of the seeded species). This would result from 2,112 acres of new seeding plus restored vigor and production within existing seedings now considered to be in the categories "highly disturbed" or "poor". The category "brush control" would have decreased by 15,319 acres largely from natural brush reestablishment. The highly disturbed category would have decreased by 27,624 acres at the end of the first fifteen years. This would happen because some acres would then be classed as seedings, and because shrub indicator species would have reestablished on the sites. Indicator shrubs are absent from highly disturbed vegetation, but present when the vegetation is in the poor, fair, or good condition categories. At the end of the initial fifteen-year period there would be 8,259 fewer acres in poor condition, 46,999 more acres in fair condition, and 7,059 more acres in good condition. This process of vegetation condition improvement is expected to continue in the long term. The rate of improvement would slow down after the first few years. Few, if any, areas would ever reach excellent condition under a program of livestock grazing.

TERRESTRIAL WILDLIFE

Big game species would reach their projected increased population numbers within the short-term period. In the long term, wildlife management direction is expected to maintain relatively stable populations. The long-term productivity resulting from the proposed action would benefit wildlife.

Upland game bird populations are expected to improve in conjunction with habitat conditions. Population differences will continue to occur on a year-to-year basis; however, as the habitat conditions improve and stabilize, the bird populations should do likewise.

Habitat disturbance caused by range improvements would result in a short-term decline and/or displacement of small animal populations. However, this would be of a temporary nature and the improvement would, over the long term, increase population numbers.

FISHERIES

Although the Proposed Action could improve water quality during the short term, it would have only a slight effect on long-term productivity of the fisheries within the ES Area. This conclusion is based on the expected continuation of low flows in most of the ES Area streams, and the lack of impact predicted on the major reservoirs.

CULTURAL RESOURCES

During the first years following implementation of the Proposed Action there would be both a continuing slight erosion of the cultural resource base and an increase in knowledge of the ES Area's history and prehistory resulting from monitoring programs and inventory related to mitigation.

Most cultural resources that might be impacted by range improvement construction activities will be preserved in situ through project redesign or relocation. However, some unintentional damage or destruction could occur to undiscovered sites with no surface component during the five-year implementation period. If such were the case, archaeological salvage might be necessary to recover some information from the impacted sites. Since cultural resources are nonrenewable, however, once a site is excavated it is effectively lost and removed from consideration as an information source. In situ protection is much more effective in assuring long-term productivity.

Damage from cattle trampling will continue in the short term, perhaps even increasing slightly in heavy livestock concentration areas. Some trampling damage can be expected in the long term as well. This cannot be effectively controlled in all cases.

The inventory and monitoring programs would enhance the prospects for long-term productivity. Each year new sites would be discovered and evaluated and increasingly appropriate measures could be designed to ensure their optimum management.

VISUAL RESOURCES

In the short term, the development of range improvements and completion of land treatment would cause temporary disruption of the landscape in localized areas, resulting in minor adverse impacts to the visual resources. In the long term, disturbed areas would revegetate and be less noticeable. Also, the proposed allocation of forage and modification of grazing systems would enhance the vegetation variety and color, resulting in long-term beneficial impacts to the visual resources.

RECREATION

Due to expected increases in game populations, hunting opportunities would increase in the short term and continue to increase slightly in the long term. The expected improvement in vegetation would enhance aesthetics both in the short and long term, and slightly increase enjoyment of sightseeing and recreational activities.

WILDERNESS

Neither the short-term implementation of the Proposed Action nor the long-term impacts that result would be expected to impair wilderness resources. If wilderness values were identified within the ES Area, they would be maintained as discussed in previous chapters.

LIVESTOCK GRAZING

Under the Proposed Action, 93 of the 112 livestock operators would experience a reduction in livestock grazing on public land in the ES Area. Expected improvement in forage quantity and quality would partially mitigate the initial loss.

In the short term, grazing use would be initially adjusted downward from the 1972-1976 average licensed use of 58,731 AUMs to the proposed initial stocking rate of 38,138 AUMs. The proposed adjustment of 20,593 AUMs would be approximately 35 percent of average licensed use. Within fifteen years an additional 9,539 AUMs of forage would be expected to be available for livestock and big game. If big game populations remained constant, requiring no additional forage, livestock grazing could be increased to 47,677 AUMs, which represents a deficit of 11,054 AUMs from 1972-1976 average licensed use.

In the long term (after 30 years), allocable forage would be expected to increase an additional 6,335 AUMs to a total of 54,012 AUMs. If this amount were also entirely available for livestock, it would represent a net deficit of 4,719 AUMs from 1972-1976 average licensed use.

The long-term effect of the Proposed Action on livestock grazing would be reduced grazing on public lands in the ES Area. It appears unlikely that future grazing could ever by fully restored to present levels.

TRANSPORTATION

The short-term implementation of the Proposed Action would not be expected to have any major influence on the long-term maintenance or enhancement of the transportation network with the ES Area.

SOCIOECONOMIC CONDITIONS

The Proposed Action would have major short-term impacts (income losses of $10,000 or more) on four operators in the ES Area. Twelve operators would have fairly significant income losses ($2,000 or more) while 64 operators would experience minor income impacts ($2,000 or less). The local economy would realize minor short-term adverse impacts to income and employment.

In the long-term, assuming additional AUMs become available for livestock use as anticipated, operator and local economy incomes would rise and some minor employment benefits would occur.

CHAPTER 7

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

This chapter identifies the irreversible and irretrievable commitment of resources resulting from the Proposed Action. Irreversible is defined as that use incapable of being reversed; once something is initiated, it will continue in use. Irretrievable means irrecoverable; once something is used, it is not replaceable.

SOILS

Topsoil that is displaced by erosion is irretrievable. As a result of implementing the Proposed Action the present rate of erosion would be reduced by 5 percent (from 1.00 to 0.95 acre feet/square mile/year); but the soil lost would remain irretrievable.

WATER RESOURCES

Total water requirements for livestock and wildlife would continue to be approximately 100 acre feet per year. This would be an irretrievable commitment of the water resource.

VEGETATION

Installation of improvements and land treatments would disturb approximately 7,609 acres of vegetation. However, only the 20 acres involved in stock trail construction would be considered to be irretrievably and irreversibly affected.

CULTURAL RESOURCES

The principal irreversible and irretrievable commitments of cultural resources resulting from implementation of the Proposed Action consist of (1) surface collection and/or salvage excavation of sites which cannot be avoided during construction of range improvements, (2) breakage and displacement of artifacts resulting from trampling by domestic livestock, (3) horizontal and vertical displacement of artifacts combined with the compromise of the stratigraphic integrity of cultural resource sites resulting from erosion, and (4) damage to sites by vandals resulting from increased access to the area.

Since cultural resources are, by definition, nonrenewable, each of the above activities results in losses which are irretrievable and irreversible.

SOCIOECONOMIC CONDITIONS

Human resources, fuel, and materials used to implement the Proposed Action would be considered to be irretrievable. Once the expenditures are made, those particular funds would not be available for alternative public programs.

CHAPTER 8

ALTERNATIVES

In this chapter, five alternatives to the Proposed Action are addressed. They are:

1. No Change (continuation of present grazing use)
2. Discontinue Livestock Grazing (complete removal)
3. Lower Level Stocking (50 percent less than the proposal)
4. Maximum Rehabilitation (additional land treatments)
5. Modified Proposal (changes on five allotments)

As in the Proposed Action, the impacts of each of the alternatives are analyzed for both the short term (the five years during implementation) and the long term (the ten years after implementation). The level of authorized use, seasons of use, types of grazing systems, number and kind of range improvements and land treatments, and (in one case) allotment boundary changes are variables considered in the alternatives. Construction standards, trespass control, and range improvement constraints would remain as described in Chapter 1.

Only those resources that would be impacted will be discussed under each alternative. The findings described in this chapter for each of the alternatives are based on the same approach, analysis, and methodologies as were used for the Proposed Action. If it was determined that impacts would be substantially the same as described in Chapter 3, this is so stated. Except where in-depth analysis is warranted, the impact discussions in this chapter are not as site specific as presented in Chapter 3.

To facilitate comparison of the alternatives with each other, with the Proposed Action, and with the existing situation, Tables 8-1, 8-2, and 8-3 (comparing stocking rates, grazing systems, and range improvements, respectively) are presented prior to the sections on individual alternatives. Following the description and analysis of the five alternatives, the impacts of the Proposed Action and the alternatives are briefly compared and summarized in Table 8-44.

TABLE 8-1

PROPOSED INITIAL STOCKING RATE FOR THE PROPOSED ACTION AND ALL ALTERNATIVES (AUMs on Public Land Only)

ALLOTMENT NAME	PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5
		NO CHANGE 1/	DISCONTINUE LIVESTOCK GRAZING	LOWER LEVEL STOCKING 2/	MAXIMUM REHABILITATION 3/	MODIFIED PROPOSAL
Black Buttes	4	7	0	2	4	4
Black Canyon	2,283	4,354	0	1,143	2,816	2,283
Canal	47	68	0	24	47	47
Clover Creek	2,031	3,828	0	1,019	2,048	2,031
Compound	60	83	0	30	60	60
Cove Creek	4	10	0	2	4	4
Davis Mountain	4,063	3,371	0	2,033	4,063	4,058
Dempsey	1,116	2,617	0	560	1,274	1,116
Fricke	7	17	0	4	7	7
Gwin Ranch	62	27	0	31	62	62
Hash Spring	400	400	0	200	400	400
Hill City Branch	57	89	0	29	57	57
Indian	2,389	4,836	0	1,196	2,663	2,389
Kime	46	100	0	23	46	46
King Hill	1,129	3,003	0	566	1,432	1,149
Kinzie Butte	720	1,326	0	360	901	720
Lava	675	2,499	0	337	1,000	675
Lower Magic	52	73	0	26	52	52
Macon Flat	2,506	4,679	0	1,253	3,367	1,085
Magic	800	1,118	0	400	800	800
North Gooding	3,750	2,344	0	1,877	3,750	3,750
North Shoshone	7,329	11,913	0	3,666	7,329	7,329
North Slope	94	122	0	94 5/	94	94
Picabo	420	973	0	210	117	409
Pioneer	485	2,121	0	243	485	485
Poison Creek	42	10	0	21	42	42
Rattlesnake	749	2,065	0	384	624	749
Richfield Cattle	2,346	2,293	0	1,172	2,346	2,346
Schooler Creek	20	17	0	10	20	20
Spud Patch	305	330	0	152	305	305
Spring Creek	90	0 4/	0	45	90	90
Springdale	39	23	0	20	39	39
Struthers	166	263	0	84	166	166
Swinging Bridge	185	166	0	94	185	185
The Pasture	72	93	0	36	72	72
Ticeska	319	826	0	160	310	319
Tikura	204	215	0	104	204	204
Timmerman East	1,386	967	0	693	1,386	1,338
Timmerman West	1,191	573	0	596	1,191	1,191
Track	176	308	0	88	266	176
"46"	14	25	0	7	14	14
"101"	305	579	0	153	305	305
Total All Allotments	38,138	58,731	0	19,147	40,443	36,673

1/ A continuation of the five year, 1972-1976, average licensed use (same as existing situation).

2/ Lower level stocking represents approximately 50 percent of the stocking rate under the Proposed Action.

3/ Initial stocking rates would be reduced from the figures shown during the two years following land treatments in order to provide for reestablishment of vegetation. Stocking could be subsequently increased as additional forage became available.

4/ Public lands do not presently have grazing privileges attached.

5/ Steep slopes render Light Stocking Alternative not viable; $7,600.00 fencing required for 47 AUMs (50 percent of 94).

TABLE 8-2

A COMPARISON OF GRAZING SYSTEMS AND SEASONS OF USE
BETWEEN THE EXISTING SITUATION, PROPOSED ACTION, AND ALL ALTERNATIVES

ALLOTMENT NAME	EXISTING SITUATION and ALTERNATIVE 1 NO CHANGE		ALTERNATIVE 2 DISCONTINUE LIVESTOCK GRAZING		PROPOSED ACTION 1/ and ALTERNATIVE 3 LOWER LEVEL STOCKING		ALTERNATIVE 4 MAXIMUM REHABILITATION		ALTERNATIVE 5 MODIFIED PROPOSAL	
	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use
Black Buttes 2/	ASG	6/1-6/30	None	None	ASG	6/1-6/30	DR-2	6/1-7/30	Same as Proposed Action	
Black Canyon 2/	MRR-3	4/16-8/31	None	None	MRR-3 & MRR-3	5/30-9/15 4/16-5/30 7/25-9/15	MRR-3 MDR-3	4/16-5/28 5/29-8/27	Same as Proposed Action	
Canal 2/	ASG	5/1-8/31	None	None	RR-3 & DR-2	5/1-9/30	DR-2	6/1-9/30	Same as Proposed Action	
Clover Creek 2/	ASG	4/1-6/15 & 10/16-12/31	None	None	RR-4 & DR-2	4/1-5/30 & 11/10-12/31 5/1-6/30 & 10/16-11/23	DR-4 & DR-2	4/1-5/26 & 11/3-12/31 5/27-6/28 & 10/16-12/31	Same as Proposed Action	
Compound 2/	ASG	5/1-7/23	None	None	RR-3	5/15-9/15	DR-2	5/15-9/15	Same as Proposed Action	
Cove Creek	ASG	4/1-6/30	None	None	DUS	8/1-8/15	Same as Proposed Action		Same as Proposed Action	
Davis Mountain 3/	MDR-3 & DUF & ASG	4/1-12/15	None	None	MRR-4 & DR-3 & DUF	4/20-6/15 &11/21-12/1 5/14-7/22 & 9/25-11/6 &11/15-12/30 7/11-9/25	Same as Proposed Action		MRR-4 & DR-3 & DUF	4/20-6/15 & 11/21-12/1 5/14-10/29 & 11/15-12/30 7/11-9/25
Dempsey 2/	RR-3 & ASG	4/16-6/15 &10/16-12/15	None	None	RR-3 & RR-3	5/1-6/30 & 10/15-12/15 6/1-6/30 10/15-10/31	MRR-3 & DR-2	5/1-6/15 & 10/15-12/15 6/1-6/30 & 10/15-1031	Same as Proposed Action	
Fricke 2/	ASG	4/16-6/15	None	None	ASG	4/16-6/15	RR-3	4/16-8/14	Same as Proposed Action	
Gwin Ranch	DUF	7/1-7/31	None	None	DR-2	6/1-9/30	Same as Proposed Action		Same as Proposed Action	
Hash Spring	ASG	5/25-10/31	None	None	MDR-2	5/25-10/31	Same as Proposed Action		Same as Proposed Action	
Hill City Branch	ASG	4/15-8/1	None	None	RR-3	5/1-9/30	Same as Proposed Action		Same as Proposed Action	
Indian 2/	ASG	4/1-6/30 & 10/16-12/15	None	None	MDR-5	4/1-6/30 & 10/16-11/30	MDR-5	4/1-6/30 & 10/16-12/15	Same as Proposed Action	
Kime	ASG	6/1-8/31	None	None	RR-3	5/1-9/30	Same as Proposed Action		Same as Proposed Action	
King Hill 2/ 3/	RR-3 & DR-2	4/1-6/15 &11/1-12/15	None	None	RR-3 & DUS	5/1-6/30 7/31-11/30	DR-3 & ASG & DUS	4/16-6/30 5/1-5/25 7/31-11/30	RR-3 & DUS	4/16-6/4 & 7/20-8/19 8/20-9/16 & 10/16-12/31
Kinzie Butte 2/	ASG	4/16-7/20 & 10/16-11/30	None	None	RR-4	4/16-8/31 & 10/16-12/15	DR-4	4/16-12/15	Same as Proposed Action	
Lava	ASG	4/16-9/30	None	None	RR-3	5/1-9/30	Same as Proposed Action		Same as Proposed Action	
Lower Magic	ASG	5/1-10/31	None	None	DR-2	5/1-10/10	Same as Proposed Action		Same as Proposed Action	
Macon Flat 2/ 3/	MRR-3	5/1-6/15 & 10/16-12/15	None	None	RR-3	5/1-6/15 & 10/15-11/30	DR-3	5/1-6/15 & 10/15-11/30	RR-3	5/1-6/15 & 10/15-11/30
Magic	DR-3	4/16-8/15	None	None	DR-3	4/16-8/15	Same as Proposed Action		Same as Proposed Action	
North Gooding	ASG	4/16-6/15 & 10/16-12/15	None	None	RR-3 & DR-2	4/16-6/15 & 10/16-12/15 4/16-6/15 & 10/16-12/15	Same as Proposed Action		Same as Proposed Action	
North Shoshone	MRR-3 & DR-2 & DUS & ASG	4/16-11/30	None	None	MRR-3	4/16-9/30 & 10/16-12/15	Same as Proposed Action		Same as Proposed Action	
North Slope	DUF	7/1-10/15	None	None	DUF	7/1-10/15	Same as Proposed Action		Same as Proposed Action	

TABLE 8-2 (Continued)

A COMPARISON OF GRAZING SYSTEMS AND SEASONS OF USE
BETWEEN THE EXISTING SITUATION, PROPOSED ACTION, AND ALL ALTERNATIVES

ALLOTMENT NAME	EXISTING SITUATION and ALTERNATIVE 1 NO CHANGE		ALTERNATIVE 2 DISCONTINUE LIVESTOCK GRAZING		PROPOSED ACTION 1/ and ALTERNATIVE 3 LOWER LEVEL STOCKING		ALTERNATIVE 4 MAXIMUM REHABILITATION		ALTERNATIVE 5 MODIFIED PROPOSAL	
	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use	Grazing System	Season(s) of Use
Picabo 2/ 3/	ASG	4/16-6/30	None	None	RR-3	5/1-8/31	DR-2	/1-6/30	RR-3	5/21-9/20
Pioneer	ASG	4/1 -6/30 & 7/1 -4/10	None	None	RR-4	4/16-8/15	Same as Proposed Action		Same as Proposed Action	
Posion Creek	ASG	5/1 -11/10	None	None	ASG	5/1 -11/30	Same as Proposed Action		Same as Proposed Action	
Rattlesnake 2/ 3/	MRR-4 & ASG	4/16-8/31	None	None	RR-5	5/5-8/16	RR-2 & DR-3	7/28-8/9 5/5-7/27	Same as Proposed Action	
Richfield Cattle	RR-4	4/16-9/15	None	None	RR-4	4/16-10/5	Same as Proposed Action		Same as Proposed Action	
Schooler Creek	DUD	11/3-11/18	None	None	DUS	7/21-11/9	Same as Proposed Action		Same as Proposed Action	
Spud Patch	ASG	4/16-6/30	None	None	DR-2	5/1-8/31	Same as Proposed Action		Same as Proposed Action	
Spring Creek	ASG	5/15-11/30	None	None	DR-2	5/15-11/30	Same as Proposed Action		Same as Proposed Action	
Springdale	ASG	5/1-7/31	None	None	ASG	5/1-7/23	Same as Proposed Action		Same as Proposed Action	
Struthers	ASG	5/1-8/31	None	None	RR-3	5/1-8/31	Same as Proposed Action		Same as Proposed Action	
Swinging Bridge	ASG	4/16-6/15 & 10/16-12/15	None	None	DR-2	4/16-6/15 & 10/16-12/15	Same as Proposed Action		Same as Proposed Action	
The Pasture	DUF & ASG	4/1-8/31	None	None	DR-2	5/16-7/3 & 10/16-12/3	Same as Proposed Action		Same as Proposed Action	
Ticeska 2/	ASG	4/1-6/30	None	None	RR-3	5/1-8/31	RR-3	4/1-6/30	Same as Proposed Action	
Tikura	DR-2	5/1-8/31	None	None	DR-2	5/1-8/31	Same as Proposed Action		Same as Proposed Action	
Timmerman East	ASG	4/16-6/15 & 10/16-12/15	None	None	MRR-4	4/16-9/30 & 10/16-12/15	Same as Proposed Action		MRR-4	4/16-10/10 & 10/16-12/15
Timmerman West	ASG	4/16-6/15 & 10/16-12/15	None	None	DR-2 & ASG	4/16-6/15 & 10/16-12/15	Same as Proposed Action		Same as Proposed Action	
Track 2/	RR-3	5/1-8/15	None	None	RR-3	5/1-8/15	DR-3	5/1-8/15	Same as Proposed Action	
"46". 2/	ASG	4/20-6/30	None	None	ASG	5/1-6/30	DR-2	5/1-6/30 & 7/1-8/30	Same as Proposed Action	
"101" 2/	ASG	4/1-6/30	None	None	DUD	11/1-2/28	DUD	11/1-3/31	Same as Proposed Action	

1/ The grazing system(s) and season(s) of use shown here do not disagree with those shown in Table 1-2 even though they are presented differently. This table is a detailed comparison between alternatives while Table 1-2 is a general presentation.

2/ For the allotments with this superscript, the grazing system for Alternative 4, Maximum Rehabilitation, is not the same as that for the Proposed Action.

3/ For the allotments with this superscript, Alternative 5, Modified Proposal, grazing systems and/or seasons of use would not be exactly the same as that for the Proposed Action, even though the grazing system designation (eg, DR-3) may be the same.

TABLE 8-3

PROPOSED RANGE IMPROVEMENTS
UNDER THE PROPOSED ACTION AND ALL ALTERNATIVES 1/

PROPOSED RANGE IMPROVEMENTS	PROPOSED ACTION		ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		ALTERNATIVE 4		ALTERNATIVE 5	
	TOTAL UNITS	UNIT DESCRIP-TION	TOTAL UNITS	UNIT DESCRIP-TION	TOTAL UNITS	UNIT DESCRIP-TION	TOTAL UNITS	UNIT DESCRIP-TION	TOTAL UNITS	UNIT DESCRIP-TION	TOTAL UNITS	UNIT DESCRIP-TION
WATER DEVELOPMENTS												
Water Wells	1.0	each	0	each	0	each	1.0	each	1.0	each	1.0	each
Storage Tanks	1.0	each	0	each	0	each	1.0	each	1.0	each	1.0	each
Pipelines	32.5	miles	0	miles	0	miles	32.5	miles	38.5	Miles	32.5	miles
Spring Development	16.0	each	0	each	0	each	16.0	each	78.0	each	17.0	each
Spring Maintenance	5.0	each	0	each	0	each	5.0	each	5.0	each	5.0	each
Reservoir Construction	24.0	each	0	each	0	each	24.0	each	57.0	each	25.0	each
Reservoir Maintenance	11.0	each	0	each	0	each	11.0	each	11.0	each	11.0	each
MANAGEMENT FACILITIES												
Fencing	117.5	miles	0	miles	0	miles	117.5	miles	176.2	miles	117.5	miles
Cattleguards	20.0	each	0	each	0	each	20.0	each	22.0	each	20.0	each
Stock Trails	20.0	miles	0	miles	0	miles	20.0	miles	20.0	miles	20.0	miles
LAND TREATMENTS												
Prescribed Burning (Without Seeding)	2,540	acres	0	acres	0	acres	2,540	acres	33,355	acres	9,730	acres
Herbicide Spraying	1,200	acres	0	acres	0	acres	1,200	acres	11,273	acres	1,200	acres
Plowing + Seeding	0	acres	0	acres	0	acres	0	acres	32,990	acres	0	acres
Chaining + Seeding	0	acres	0	acres	0	acres	0	acres	140	acres	140	acres
Burning + Seeding	1,500	acres	0	acres	0	acres	1,500	acres	3,080	acres	1,500	acres
Spraying + Seeding	0	acres	0	acres	0	acres	0	acres	1,434	acres	0	acres
Seeding Only	612	acres	0	acres	0	acres	612	acres	5,006	acres	952	acres

1/ In addition to the listed range improvements, all existing improvements would be maintained in serviceable condition except under Alternative 2, (Discontinue Livestock Grazing), in which unnecessary existing improvements would be removed.

ALTERNATIVE 1:

NO CHANGE

Description of Alternative 1

Under this alternative the present level of livestock grazing management would be continued within the ES Area without change. Active licensed livestock use would continue at 58,731 AUMs (1972-1976 average licensed use). No new grazing systems would be developed, and present seasons of use would be maintained. Existing allotment boundaries would not be altered, and livestock would continue to graze on the 53 allotments as they do today. Conversions in kind of livestock would not be permitted (i.e., changes from sheep to cattle or vice versa).

Activity plans for resources other than livestock grazing would be developed only to the extent that they would not significantly alter the present livestock grazing management. There would be no specific forage allocation for wildlife.

Existing range improvements would be maintained if presently operable but not restored if presently inoperable. No new range improvements, including land treatments, would be authorized except in emergency cases such as after wildfires.

Easements and permits would be handled under existing laws and regulations as at present.

Analysis of Alternative 1

This alternative would allow present grazing management to continue essentially unchanged but would not eliminate the impact cause agents discussed in Chapter 3 (forage allocation, grazing systems, range improvements, and protection from grazing). Even though the cause agents would remain unchanged, they would continue to have both short- and long-term impacts on the existing environment.

Impacts on Soils

Under the No Change Alternative, there would be no significant change in the impacts presently occurring on the soil resource for the entire ES Area. The average erosion rate would remain 1.00 ac ft/sq mi/yr. Presently, one proposed allotment (310 acres) has a low erosion rate, 15 proposed allotments (185,368 acres) have moderate erosion rates, and 26 proposed allotments (378,952 acres) have high erosion rates. The same acreages and erosion rates would continue under the No Change Alternative. A summary of erosion rates and change in erosion rates by allotment and alternative is given in Table A2-1.

In comparison to the No Change Alternative, the Proposed Action would reduce the present erosion rate approximately 5 percent to an estimated future rate for the entire ES Area of 0.95 acre ft/sq mi/yr. Three proposed allotments (32,448 acres) would have low erosion rates, 20 proposed allotments (165, 007 acres) would have moderate erosion rates, and 19 proposed allotments (367,175 acres) would have high erosion rates under the Proposed Action.

There would be no short-term adverse impacts due to new range improvements under the No Change Alternative as compared to the 6,109 acres of short-term disturbance from range improvements under the Proposed Action. Conversely, the long-term overall beneficial impact on soils resulting from improved cattle distribution and increased vegetative cover would not occur in this alternative.

Impacts on Water Resources

No beneficial impacts would be expected to occur under the No Change Alternative. Sedimentation, water yield, water quality, and supply would remain unchanged with this alternative where static conditions have been reached. Areas with presently declining conditions would continue to decline. These areas include the Black Buttes, Black Canyon, Compound, Hash Springs, Hill City Branch, Indian, Kime, Lower Magic, Macon Flat, Picabo Cattle, Pioneer, Rattlesnake, The Pasture, Tikura, and "101" Allotments, totaling about 176,300 acres.

Impacts on Vegetation

With the No Change Alternative livestock grazing would continue at the present level (1972-1976 average licensed use) of 58,731 AUMs annually. In addition, 3,468 AUMs would be required to meet present big game competitive forage requirements. Therefore, 62,199 AUMs (49,759,200 pounds of air-dried forage) would be consumed annually. However, the 1976-77 inventoried grazing capacity for all large grazing animals was 53,900 AUMs (43,120,000 pounds); thus, 8,299 more AUMs (6,639,200 pounds) would be grazed than could be properly allocated (Table 1-6).

Heavy utilization of yearly forage production reduces plant vigor, prevents adequate seed production, and discourages reproduction of desirable forage species. It also reduces the amount of plant litter on the ground surface, exposing the soil to erosion by wind and water. These current adverse impacts would be expected to continue if this alternative were adopted.

Currently, 27 allotments (240,964 acres of public land, 43 percent of the ES Area) and portions of 5 others (173,871 acres of public land, 31 percent of the ES Area) have annual spring grazing. Even on allotments presently having rotation grazing systems (see Table 1-2), much of the use is concentrated into the critical spring and early summer grazing periods before the livestock are taken to higher elevations, private grazing lands, or to the National Forest for summer grazing.

Under this alternative, livestock grazing would continue to be concentrated in the critical spring and early summer use periods. On the ES Area as a whole, approximately 65 percent of present grazing takes place between April 1 and July 15. The applicable literature (see "Impacts to Vegetation, Response to Season of Grazing Use," Chapter 3) indicates that spring to early summer grazing year after year is harmful to the vegetation. Pertinent information from research literature and from field observations within the ES Area is summarized in Table 3-6.

Forage plants depend on an adequate storage of carbohydrate reserves as a food supply to produce about 10 percent of the rapid growth of herbage that occurs during the spring season. The carbohydrate storage is made during the latter part of the growing season and reaches its peak during early August. If grazing occurs during the spring and early summer, when plants are drawing heavily upon their own food reserves, it depletes their carbohydrate reserves and leaves the plants in a low state of vigor. The following growing season the plants are left with an inadequate storage of carbohydrates, which results in poor growth and decreased vigor. Moderate to heavy spring and early summer grazing year after year eventually kills the desirable forage plants. This adverse impact would continue under this alternative.

Repeated grazing by 10,720 sheep and 13,430 cattle during the growing season on the same areas now occurs. This defoliates the desirable forage plants (see Table 3-5 for a list of key species) and prevents them from producing adequate leaves, seedstalks, and seedheads. The plants receiving continued grazing are unable to produce viable seed, and reproduction is reduced or eliminated. If this practice were continued over the next several years, desirable forage plants would die. A loss of approximately 1,396,000 pounds of desirable forage would occur over the next 15 years (present production of 43,120,000 pounds less expected production of 41,724,000 pounds).

Livestock, especially cows with calves, presently congregate in areas where desirable forage and water are readily available. They stay in these areas until the available forage and/or water are depleted. The livestock then begin using forage in areas of difficult accessibility and/or of low palatability. They also begin traveling up to two miles from water. If livestock were allowed to continue to concentrate in the same areas year after year, it would result in the removal of desirable perennial forage species and promote the establishment of undesirable annual or shrubby vegetation. It would also cause localized soil compaction problems that could lead to the removal of nearly all vegetation and result in accelerated erosion. The compaction problems could become especially severe if livestock were allowed to continue congregating on heavy clay soils during the spring season when the soil moisture content is high.

The most serious impacts of continued poor livestock distribution would occur in the riparian zones (11,651 acres, 2 percent of the ES Area), and other areas where slopes are gentle, forage is present, and water is available (estimated at 186,000 acres, 33 percent of the ES Area). Livestock would remain in these areas until the palatable forage is depleted. They would also trample the unpalatable vegetation. This would eventually remove most of the ground cover and result in increased erosion and degradation of the site.

If this alternative were adopted, overstocking, overuse during the spring, repeated grazing, and poor livestock distribution would continue. One result would be a continuing decline in vegetation condition. This prediction is based upon existing observed apparent trend data, interpretation of limited photo trend data, comparison of old photos (1950-1960) to existing conditions for the same area, and field observation in every allotment.

Table 8-4 shows expected future acres and forage production (expressed in AUMs) for each of four vegetation condition categories and two man-caused categories (seeding and brush control) by allotment. These predictions are best professional estimates based upon applicable soils data, field samples, and previously observed responses of vegetation. Although quantified, they are not absolute because wildland management is not an exact science. Table 8-5 is a summary comparison of the existing vegetation condition and the expected condition in fifteen years without a change in management. The number of seeding and brush control acres would decrease about 1 percent if present management continued. Heavy spring use on seedings would decrease the vigor of seeded species, thereby allowing cheatgrass, medusahead, and other annuals to gain control. Brush encroachment, a natural occurrence within the sagebrush zone, would be hastened on an estimated 4,735 acres of existing seedings and brush control projects if present management continued.

The amount of public land in the ES Area in highly disturbed or poor condition would change from the existing 48 percent to 50 percent of the total under this alternative (42 percent with Proposed Action). Public land in fair and good condition presently makes up 40 percent of the total; with this alternative this figure would be reduced to 39 percent (47 percent with Proposed Action). The expected increase in highly disturbed and poor condition and the expected decrease in the more desirable categories would be directly related to the expected increase in downward trend.

Trend, an evaluation of the movement toward or away from potential natural vegetation, would change under this alternative. Three classes of vegetation trend are shown in Table 8-6. The acres within each trend class are displayed by allotment, both for existing trend and expected trend in fifteen years if present management continued. The amount of public land in downward trend would be expected to change from 22 to 40 percent (4 percent with

TABLE S - 4

EXPECTED VEGETATION CONDITION IN 15 YEARS UNDER ALTERNATIVE 1, NO CHANGE

(PUBLIC LAND WITHIN PROPOSED ALLOTMENTS)

	Seeding		Brush Control		Highly Disturb.		Poor		Fair		Good		Total Capabilities After 15 Years UNDER ALTERNATIVE 1, NO CHANGE	
Allotment Name 1/	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
BLACK BUTTES					20	2	29	1					49	3
BLACK CANYON	2,485	221			8,645	574	31,381	1237	7,556	603	488	31	50,555	2666
CANAL									511	47			511	47
CLOVER CREEK	3,577	327			394	27	19,687	1384	16,812	786	1,965	179	42,435	2703
COMPOUND							457	51					457	51
COVE CREEK							54	4					54	4
DAVIS MOUNTAIN	3,698	842			1,985	95	12,976	615	18,697	2260	1,674	260	39,030	4072
DEMPSEY	1,801	152			6,205	419	6,736	447	4,263	303	1,009	69	20,014	1390
FRICKE					19	2	68	4					87	6
GWIN RANCH									487	74			487	74
HASH SPRING							380	62	2,330	427	3,036	630	5,746	1119
HILL CITY BRANCH							541	42	146	10			687	52
INDIAN	3,203	394			5,894	406	11,651	671	11,893	661	2,707	273	35,348	2405
KIME							354	24	246	17			600	41
KING HILL	2,423	232					19,833	1362	2,189	165	923	57	25,368	1816
KINZIE BUTTE	300	30					5,786	566	2,598	297			8,684	893
LAVA							22,300	657	5,700	245			28,000	902
LOWER MAGIC					204	16	59	6					263	22
MACON FLAT							19,967	1611	18,561	1570	454	46	38,982	3227
MAGIC	2,024	370	1,821	299			285	21	1,922	136			6,052	826
NORTH GOODING	2,420	732	2,720	574			12,382	965	16,620	2078	7,263	1446	41,405	5795
NORTH SHOSHONE	6,637	952	16,563	2113	10,368	1262	38,735	4231	18,852	2547	2,473	319	93,628	11,424
NORTH SLOPE							32	4	233	32	396	58	661	94
PICABO	861	123					6,645	428	364	29			7,870	580
PIONEER	1,634	273			2,001	160	3,127	187					6,762	620
POISON CREEK											269	45	269	45
RATTLESNAKE	465	47			6,875	383	5,246	304	5,289	331	2,406	146	20,281	1211
RICHFIELD CATTLE			4,658	1180			1,780	217	15,577	1873			22,015	3270
SCHOOLER CREEK									49	27	9	7	58	34
SPUD PATCH							3,108	222	786	87			3,894	309
SPRING CREEK									478	113	85	18	563	131
SPRINGDALE	18	14							292	25			310	39
STRUTHERS							2,392	171					2,392	171
SWINGING BRIDGE							320	30			2,619	368	2,939	398
THE PASTURE					760	58	158	5					918	63
TICESKA	1,760	304					2,131	185					3,891	489
TIKURA							3,643	213					3,643	213
TIMMERMAN EAST							2,750	205	26,202	2435			28,952	2640
TIMMERMAN WEST			1,280	200			1,066	130	3,158	350	8,946	1077	14,450	1757
TRACK			1,138	197					836	62			1,974	259
"46"					171	11	37	2					208	13
"101"	1,133	156			360	25	2,645	100					4,138	281
Total For All Allotments	34,439	5,169	28,180	4,563	43,891	3,440	238,751	16,364	182,647	17,590	36,722	5,029	564,630	52,155

1/ With this alternative, livestock would continue to graze in the 53 existing allotments. The information is shown for the 42 allotments in the Proposed Action for purposes of comparative analysis.

TABLE 8 -5

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION, EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION, AND EXPECTED CONDITION IN 15 YEARS UNDER ALTERNATIVE 1, NO CHANGE

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION - PROPOSED ACTION			FUTURE CONDITION - ALTERNATIVE 1		
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM EXISTING 2/ (PERCENT)	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL	DEGREE OF CHANGE FROM PROPOSED ACTION 3/ (PERCENT)
Seeding	36,878	6.5%	44,022	7.8%	19.4%	34,439	6.1%	-21.8%
Brush Control	30,476	5.4	15,157	2.7	-50.3	28,180	5.0	85.9
Highly Disturbed	38,379	6.8	10,755	1.9	-72.0	43,891	7.8	308.1
Poor	234,931	41.6	226,672	40.1	- 3.5	238,751	42.3	5.3
Fair	186,157	33.0	223,156	39.5	19.9	182,647	32.3	-18.2
Good	37,809	6.7	44,868	7.9	18.7	36,722	6.5	-18.2

1/ May not add to 100 percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment under the Proposed Action divided by total acres in the present environment for each vegetation condition category.

3/ The degree of change represents total acres in the expected future environment under this alternative divided by total acres under the expected future environment under the Proposed Action for each vegetation condition category.

TABLE 8-6

EXISTING VEGETATION TREND, AND EXPECTED VEGETATION TREND IN 15 YEARS UNDER ALTERNATIVE 1, NO CHANGE

(Public Land Within Proposed Allotments)

Allotment Name	Total Acres	EXISTING VEGETATION TREND			EXPECTED FUTURE VEGETATION TREND UNDER ALTERNATIVE 1, NO CHANGE		
		Upward (acres)	Downward (acres)	Static (acres)	Upward (acres)	Downward (acres)	Static (acres)
Black Buttes	49		26	23		49	
Black Canyon	50,555		13,212	37,343		49,667	888
Canal	511			511			511
Clover Creek	42,435		4,439	37,996		23,694	18,741
Compound	457			457		457	
Cove Creek	54			54			54
Davis Mountain	39,030	1,246	8,840	28,944		9,890	29,140
Dempsey	20,014		11,154	8,860		18,964	1,050
Fricke	87			87		87	
Gwin Ranch	487			487			487
Hash Spring	5,746	1,115	315	4,316	1,010	630	4,106
Hill City Br.	687		120	567		687	
Indian	35,348		9,429	25,919		12,371	22,977
Kime	600			600			600
King Hill	25,368		6,294	19,074		18,515	6,853
Kinzie Butte	8,684		3,821	4,863	4,863	3,821	
Lava	28,000		8,501	19,499		8,501	19,499
Lower Magic	263			263		263	
Macon Flat	38,982		9,222	29,760		21,345	17,637
Magic	6,052	1,387		4,665			6,052
North Gooding	41,405			41,405			41,405
North Shoshone	93,628		25,036	68,592		29,211	64,417
North Slope	661			661			661
Picabo Cattle	7,870		2,642	5,228		6,900	970
Pioneer	6,762		4,607	2,155		5,010	1,752
Poison Creek	269			269	269		
Rattlesnake	20,281		4,897	15,384		4,897	15,384
Richfield Ctl.	22,015	6,524	800	14,691			22,015
Schooler Creek	58	58					58
Spud Patch	3,894		1,920	1,974			3,894
Spring Creek	563			563			563
Springdale	310			310			310
Struthers	2,392			2,392			2,392
Swinging Bridge	2,939	1,320	320	1,299			2,939
The Pasture	918		903	15		918	
Ticeska	3,891			3,891		3,891	
Tikura	3,643		3,643			3,643	
Timmerman East	28,952			28,952	28,952		
Timmerman West	14,450			14,450	4,915		9,535
Track	1,974			1,974			1,974
"46"	208		171	37		171	37
"101"	4,138		4,138			4,138	
Total of All Allotments	564,630	11,650	124,450	428,530	40,009	227,720	296,901
Percentage of Total Acreage	100	2	22	76	7[1/]	40	53

1/ The predicted five percent increase in upward trend results primarily from the expected improvement in the Timmerman East Allotment during the next fifteen years. Current observed apparent trend data indicates a high static condition, almost an upward trend, resulting from voluntary nonuse of nearly 70 percent of active grazing privileges over the past several years.

the Proposed Action); the amount in upward trend would change from 2 to 7 percent (67 percent with the Proposed Action); and the amount in static trend would change from 76 to 53 percent (29 percent with the Proposed Action).

In summary, with no change in the grazing program, forage vigor and quality would decrease. The vegetation would continue to be utilized beyond the surveyed grazing capacity by over 6,600,000 pounds (8,299 AUMs) annually. Vegetation condition would continue to deteriorate, especially those areas now in a downward trend, approximately 40 percent (227,720 acres) of the ES Area.

Impacts on Terrestrial Wildlife

General Impacts. The impacts resulting from the No Change Alternative would cause a decline in virtually all wildlife populations. The vegetation, which affords food, cover, or both to practically all species inhabiting the ES Area, would decline in quality and quantity. The lack of adequate food and cover would result in poorer-conditioned animals, reduced productivity, increased susceptibility to disease and predators, and subsequently, significantly lower populations.

This alternative allows for no allocation of forage for any wildlife species. Consequently, the animals presently inhabiting the ES Area would compete with livestock for all available forage. The vegetation condition would decrease because of the extremely heavy utilization, causing a significant decline in available wildlife food and cover. The poor vegetation conditions would lead to lower wildlife populations.

The grazing systems under this alternative would adversely impact wildlife populations. Rest-rotation or deferred-grazing systems would continue to cause increased concentrations of livestock in use pastures, resulting in reduced food, cover, and space for wildlife. Additionally, because of the heavy cattle use, most of the grazing systems would be totally ineffective in improving habitat conditions over a longer period of time.

Early spring and fall grazing would exist in the following allotments that encompass important or crucial wildlife habitat: King Hill, Dempsey, Indian, Clover Creek, North Shoshone, and Picabo. The impacts resulting from spring and fall grazing were discussed in Chapter 3; however, since livestock numbers would not be reduced under this alternative, the adverse impacts would be more severe than previously described.

As no range improvement projects would be undertaken under this alternative, no impacts would result.

Impacts on Big Game.

Mule Deer. Mule deer populations would decline. The lack of adequate spring and summer forage for resident animals and insufficient winter forage for both residents and migrants would result in poorer-conditioned animals, less productivity, and increased susceptibility to disease and predators. These factors would combine to reduce resident mule deer populations approximately 10 percent and winter migrants five percent.

Elk. Elk populations would be expected to remain static or decline slightly. Elk presently inhabit areas in generally fair to good condition, and it is expected that these condition classes would remain unchanged. The present vegetation conditions have resulted either from reduced livestock grazing over the past 20 to 30 years or from the low accessibility of the areas to livestock. The patterns causing the present conditions would be expected to continue; therefore, elk numbers would be expected to remain approximately the same.

Antelope. Under this alternative antelope populations would decline slightly. The competition for forage would be very keen in specific areas and would have a definite adverse impact on antelope. However, the mobility of the antelope would tend to offset the forage competition problem, thus lessening the impact.

The lack of any land treatment projects would ensure that adequate winter forage would be maintained for existing numbers.

Impacts on Small Mammals. The "General Impacts" section describes what impacts would be expected on small mammals and how their populations would react.

Impacts on Birds.

Sage Grouse. The impacts on sage grouse resulting from this alternative would include decreased availability of late spring and summer forage, decreased understory nesting cover, lower reproductive success, and subsequently, lower populations. Approximately 5 percent fewer nests would be produced than currently exist, which is approximately 65 percent fewer nests than would be produced under the proposed action.

Because no land treatment projects are proposed under this alternative, there would be no opportunity to improve that habitat with prescribed burns or seedings.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves. The impacts to these species would be the same as those described for sage grouse. Populations would decline because of the lack of high quality food and cover. The impacts to pheasants would be least significant, but because escape and winter cover would be reduced, the pheasants using public land would be adversely impacted.

Waterfowl. The impacts on waterfowl would be essentially the same as those described under the proposed action (Chapter 3).

Nesting cover adjacent to water would be unavailable because of the concentration of livestock around the water areas. The lack of cover would result in fewer numbers of nests and reduced nesting success, both of which would lead to lower populations.

Impacts on Threatened, Endangered, and Sensitive Wildlife. This alternative would have no impact on the bald eagle and no significant impacts on the sensitive species inhabiting the ES Area.

Summary

The cumulative impacts arising from the No Change Alternative would cause a decline in virtually all wildlife populations. Resident mule deer populations would be expected to decline approximately 10 percent while the migratory populations would decline approximately 5 percent. Elk and antelope populations would be expected to decline about 10 percent.

Upland game bird nests would decline an estimated 5 percent, but waterfowl nest numbers would be expected to remain static. Other species, including small mammals and birds, would be expected to decline, but as no estimate of their population numbers or number of nests have been made, the amount of decline cannot be quantified.

Impacts on Fisheries

The aquatic habitat conditions along the streams would not change appreciably from those described for the existing environment (Chapter 2).

The stream reaches presently accessible to livestock would continue to be grazed, and this would perpetuate the existing poor or fair conditions. Conversely, the stream reaches that are inaccessible to livestock because of steep canyon walls, talus slopes, etc., would remain inaccessible, and their good condition would not change.

Impacts on Cultural Resources

Under this alternative the present downward trend in the condition of cultural resources in the ES Area would continue, perhaps at an accelerated rate. This would occur because alterations to cultural resource sites are permanent and irreversible. Once a site is initially disturbed, subsequent impacts serve to compound the situation, the impacts become cumulative, and the downward trend resulting from the initial disturbance become accelerated. Artifact damage and displacement from cattle trampling and erosion would generally be expected to continue at their present intensities. Some increase in trampling and erosional impacts could be expected in areas of heavy livestock concentrations, particularly near unprotected spring areas. Expectable impacts due to vandalism would be expected to remain at the same level as presently.

Since no new range improvements would be constructed, a slight to moderate decrease in baseline data would be expected, as archaeological clearance acitivities would not be accomplished; and many currently undiscovered sites would remain undiscovered.

Impacts on Visual Resources

Continuation of the present grazing management would adversely affect visual resources in the allotments which currently have a declining range trend. Livestock grazing would continue to cause vegetation contrasts, especially along fence lines and in livestock concentration areas. Allotments that have a static or upward range trend under present management would tend to remain static or show improvement in visual resources. Existing livestock facilities would continue to present visual contrasts, but no new facilities would be constructed. No livestock-related land treatments would be conducted, so they would not be a source of visual contrasts under this alternative.

Impacts on Recreation Resources

Due to the decline in vegetation condition predicted for a majority of the allotments, recreation resources would be adversely affected. A decrease in quality of opportunities would occur for sightseeing, hiking, camping, and hunting. However, despite the reduced quality of experience, demand would remain approximately the same or higher than at present.

Impacts on Wilderness

The wilderness inventory and analysis described in Chapter 2 would continue unaffected by this alternative. No wilderness areas would be lost or impaired. If areas having wilderness characterisitcs were identified, any conflicting activities would be restricted until Congress acts on designation of the areas.

Impacts on Livestock Grazing

If present management continues, less forage would be available from the public lands after fifteen years. The 1976 vegetation inventory indicated 53,900 AUMs (43,120,000 pounds of air-dried forage), or 65 percent of present active qualifications, could be allocated to domestic livestock (Table 1-6). Available domestic livestock forage would decline from 53,900 AUMs to approximately 52,155 AUMs, 63 percent of present active qualifications, after fifteen years under this alternative. Table 8-4 shows estimated future vegetation condition and AUM production after fifteen years without a change in management. The decline from the present 53,900 AUMs production to the estimated future 52,155 AUMs production means that 1,745 AUMs (1,396,000 pounds) less forage would be available for livestock grazing.

Along with the expected reduction in quantity of available forage, a decline in forage quality and dependability would be expected. As forage near water, along riparian zones, on flat areas, and on gentle slopes became depleted, livestock, especially cows with calves, would be forced to travel greater distances in search of sufficient palatable forage. This would cause livestock to take less palatable plant species. On areas now having a high percentage of annual plants such as cheatgrass, livestock would continue to make good weight gains most years, but during years of poor annual plant production, weight gains would drop off appreciably.

The impacts to livestock grazing caused by continuing present stocking rates and seasons of grazing use would not be significant in the short term (five years). However, there would be some adverse impacts in the long term (five to fifteen years) from continuing the present overstocking, making concentrated spring use, regrazing the same areas several times in a season, and continuing the present poor distribution of livestock. Livestock weight gains, on a per-unit basis, would decline. General animal health and resistance to disease would decline slightly. The possibility of sickness or death to domestic animals from poisonous plants on depleted ranges would increase.

In summary, forage quantity and quality would decrease with this alternative. There would be 1,745 less AUMs available for livestock after fifteen years. Decreased forage quality would cause a decrease in weight gains, in general animal health, and in disease resistance.

Impacts on Socioeconomic Conditions

Population and Employment. Population and employment levels would not differ significantly from those levels identified in Chapter 2, "Socioeconomic Conditions."

Income. Under this alternative the initial stocking rate would remain at 58,731 AUMs, the average five-year licensed use. This stocking level represents a reduction of 24,389 AUMs from active qualified demand but no reduction from present actual use.

Since this alternative sets initial stocking rates equivalent to the average demand over the past five years, there would be no short-term economic impact as a result of its implementation.

In the long term the AUMs available for livestock use would drop to 52,155 due to the continued grazing in excess of inventoried capacity. This loss of 6,576 AUMs, at $7.91 per AUM, would be an annual income loss of $52,000.

Social Values and Attitudes. Without changes in the level of grazing permitted on public lands, livestock operators would probably develop slightly altered expectations regarding future availability of public grazing privileges. Less relaxed attitudes about maintenance of current levels of use would have been induced by recent discussion of the proposed action. Heightened uncertainty would influence operators' plans for the future in unpredictable fashion and degree.

The immediate emotional response of affected operators and the community would be relief and possibly a softening of resentment toward BLM based on the assumption their objections regarding the proposed action had influenced the decision. Choice of this alternative, combined with recently improved cattle prices, would be likely to generate a temporary mood of optimism in local residents.

ALTERNATIVE 2:

DISCONTINUE LIVESTOCK GRAZING

Description of Alternative 2

Under this alternative all licensed livestock would be removed from the public lands in the ES Area. All grazing permits and cooperative agreements for livestock use on the public lands would be cancelled. However, livestock operators with investments in cooperative agreement projects would be entitled to appropriate salvage rights.

All forage would be reserved for values other than livestock grazing, and BLM would continue to manage the public lands for all other multiple uses as mandated in the Federal Land Policy and Management Act of 1976.

Limited livestock trailing would be permitted through the ES Area to provide access to or from National Forest, private, and/or State lands, but no particular forage allocation would be made. Total forage consumed during trailing would be approximately 400 to 500 AUMs annually (based on current crossing permit data). Use would be almost entirely by trailing sheep. Livestock numbers, routes, and crossing times would be strictly monitored and controlled by BLM personnel.

If State and private lands intermingled with public lands were used for livestock grazing, fences and cattleguards would have to be installed where appropriate to ensure against livestock trespass on public land. This would be the responsibility of the individual landowners.

New range improvements would be developed by BLM only if necessary for programs other than grazing, such as wildlife habitat or watershed. Existing range improvements would be maintained or removed after considering their beneficial or adverse impacts on other resources. Easements and permits would be handled under existing laws and regulations.

Analysis of Alternative 2

Under this alternative, three of the cause agents (allocation of forage, grazing systems, and range improvements) would be essentially eliminated. However, removal of these cause agents, which have been dominant factors in past management of the public land, would result in substantial impacts to the existing environment. The fourth cause agent (protection from grazing) would be an integral part of this alternative and would also be a source of impacts.

Impacts on Soils

Implementation of this alternative would have an overall beneficial impact on soils by improving cover, increasing soil productivity, and reducing erosion. Cover would increase by an estimated 14 percent, and erosion rates would decrease an estimated 16 percent from a present rate of 1.00 ac ft/sq mi/yr to 0.84 ac ft/sq mi/yr. This change is about three times greater than the 5 percent decrease anticipated under the Proposed Action.

In the long term, by discontinuing livestock grazing, 4 proposed allotments (33,366 acres) would have low erosion rates, 21 proposed allotments (260,393 acres) would have moderate erosion rates, and 17 proposed allotments (270,871 acres) would have high erosion rates. This compares with three proposed allotments (32,448 acres) having low erosion rates, 20 proposed allotments (165,007 acres) having moderate erosion rates, and 19 proposed allotments (376,175 acres) having high erosion rates in the long term under the Proposed Action. A summary of erosion rates and predicted changes in erosion rates by alternative is given in Appendix Table A2-1.

As there would be no range improvements under this alternative, there would be no short-term adverse impacts due to them. This compares with the 6,109 acre short-term disturbance under the Proposed Action. If range improvements necessary for wildlife habitat and watershed protection were undertaken under this alternative, some short-term disturbance would occur. In the long-term these treatments would increase the overall beneficial impacts on the soil resource.

Impacts on Water Resources

Discontinuing livestock grazing in the ES Area would result in watershed improvements on all areas where impacts from livestock grazing have been severe. As with the Proposed Action (see Chapter 3), improvements in sedimentation would occur on the excluded areas, but the significance of such reductions cannot be evaluated because of the lack of data. It is estimated that soil loss (erosion rates) would average 0.92 ac ft/sq mi/yr on allotments containing important streams. This reduction is about 11 percent below levels expected under the Proposed Action and 18 percent less than existing conditions. Direct runoff would be reduced as a result of increased vegetation cover. It is estimated that nine allotments, totaling approximately 159,000 acres, would have less than 70 percent total cover. This is a 48 percent increase in area reaching that level compared to the Proposed Action. The increased cover would increase the present ten-year equalized return period runoff amount to a fourteen-year occurrence. The reduction in surface runoff would add to the potential reduction in sedimentation problems identified by Rabe, et al. (1976).

Many studies, including those of Cordone and Kelly (1961) and Duff (1977), have shown that complete removal of livestock results in great improvement in watershed conditions where grazing has been heavy and especially where grazing has occurred in riparian zones. It is expected that significant improvements in streambank condition would occur, which would help reduce the sediment problems identified by Rabe, et al. (1976). Overland erosion rates would be reduced 16 percent as compared to the 5 percent decrease expected under the Proposed Action. The improved condition of stream channels could significantly improve water quality on streams predominantly controlled by BLM. This would be a direct result of livestock removal and subsequent improvement of the riparian vegetation. Other problems caused by livestock would be eliminated as a result of this alternative, but it is doubtful that any significant change in chemical water quality would be noticed. Bacteriological quality would probably improve under this alternative because no livestock would be in the streams, and it is doubtful that wildlife could replace the bacterial fraction contributed by livestock. Temperatures of streams would likely decrease where riparian vegetation would provide new cover on 29 miles of stream.

Water consumption would be 80-100 acre-feet less per year under this alternative than under the Proposed Action, but this is considered insignificant in relation to the total water use in the ES Area. No difference between this alternative and the Proposed Action would be expected concerning total surface and ground water supply.

In summary, no adverse impacts would occur with the Discontinue Livestock Grazing Alternative. The alternative could improve water quality in relation to sedimentation, temperature, and bacterial pollution over and above that of the Proposed Action. This added enhancement could be beneficial to related uses such as fisheries where other limiting factors are not encountered.

Impacts on Vegetation

With this alternative practically all livestock grazing would be discontinued. Only 400 to 500 AUMs (320,000 to 400,000 pounds of air-dried forage) would be consumed annually by trailing livestock under crossing permits. Vegetation would be grazed only by wildlife and trailing sheep. Such grazing use, amounting to approximately 5,100 AUMs (4,117,600 pounds), would be 12 percent of the amount under the Proposed Action (4,647 wildlife AUMs plus 38,138 livestock AUMs).

The immediate and long-term beneficial impact to vegetation would be the large reduction in stressful defoliation (grazing). Forage plant species would be able to complete their yearly growth, reproduction, and dormancy cycle relatively free of the adverse effects of grazing during critical stages of development. Table 3-6 shows important phenological (life cycle) events in relation to defoliation for perennial grasses. Under this alternative, forbs and shrubs, as well as grasses, would be able to go through growth stages similar to those shown in the "Without Defoliation" column of Table 3-6.

Plant growth begins in early spring; root growth normally precedes shoot growth. Late spring is the period of most rapid root and shoot elongation; carbohydrate food reserves of the plant are lowest during this period as they have been used up by rapid tissue growth. During late spring and early summer the plant is at the peak of its reproductive cycle. Stored food reserves begin to build up because the plant is manufacturing more food than it is consuming. Seeds are ripe and "shatter" in late summer when food reserves build rapidly. Moisture-stress-induced dormancy occurs by mid to late August. Some fall "green-up" occurs during years when abundant September and October rains combine with warm temperatures. By late fall temperature-induced dormancy occurs and continues until spring. During the winter the plant is sustained by its stored root reserves.

Plant species such as crested wheatgrass, bluebunch wheatgrass, and the others listed in Table 3-5 that presently provide most of the forage for livestock would have the opportunity to complete their yearly cycles without heavy grazing pressure. In a few years, the plants would gain maximum vigor; develop deep, healthy root systems; store maximum food reserves; and produce an abundance of viable seed.

Yearly plant growth not removed from the environment through grazing or wildfire becomes litter. Some plant residues, such as dead woody stems, remain in place for many years under semiarid conditions; these are called persistent litter. Other residues, such as fine grass and forb leaves, decompose rapidly through weathering and disappear within a year; these are called nonpersistent litter. Presently this litter, a natural part of the wildland vegetation, is being partially harvested by livestock.

Under present stocking levels approximately 11.7 percent of total vegetation production is being consumed as forage by livestock. With this alternative that consumption would decrease to 1.0 percent.

The impact of leaving more herbaceous (nonwoody) plant material would be greater than implied by the percent decrease of total production harvested by grazing animals. Presently an estimated 66,040,000 pounds of palatable grasses and forbs are being produced annually on public lands in the ES Area. Of that total, 46,984,800 pounds (71 percent) are presently being harvested by livestock. Under this alternative only 4,117,600 pounds (6 percent) would be harvested. Increased herbaceous vegetation left unharvested would remain as litter and help protect the soil from wind and/or water erosion, as described in Chapter 3, "Impacts on Vegetation."

It should be noted that more litter would increase the danger of wildfire. However, fire is a natural part of the environment and often occurred unchecked before the white man arrived. Vigorous plants with hardy root systems would be able to reestablish after wildfire.

Table 8-7 shows expected future acres and forage production (expressed in AUMs) for each of four vegetation condition categories and two man-caused categories (seeding and brush control) by allotment. These predictions are best professional estimates based upon applicable soils data, field samples, and previously observed responses of vegetation. Table 8-8 is a summary comparison of the existing vegetation condition and the expected condition in fifteen years without livestock grazing. The amount of seeding would increase 6,981 acres if livestock grazing were discontinued, mainly as a result of seeded species regaining vigor and producing more than 15 percent of the total herbage yield on seeded sites. Brush control would decrease by an estimated 2,300 acres as a result of natural brush encroachment. Increased big game numbers would not lessen the natural reinvasion of brush species appreciably because so much brush would be available to them. In isolated instances increased deer herds could control brush invasion but it would not be widespread. The conclusions of improved seeding vigor and competitiveness, as well as shrub reinvasion on sagebrush sites, were drawn from field observations of livestock exclosures within existing seedings and areas treated by herbicides to control brush.

The amount of public land in highly disturbed or poor condition would decrease from the existing 48 percent to 34 percent of the total under this alternative (42 percent with Proposed Action). Public land in fair and good condition presently makes up 40 percent of the total; with this alternative it would increase to 54 percent (47 percent with Proposed Action). The expected decrease in highly disturbed and poor condition and the expected increase in the more desirable categories would be directly related to the expected dramatic increase in upward trend.

Trend, an evaluation of the movement toward or away from potential natural vegetation, would change under discontinued livestock grazing. Three classes of vegetation trend are shown in Table 8-9. The acres within each trend class are displayed by allotment. The amount of public land in downward trend would decrease from the current 22 percent to 0 percent (4 percent with the Proposed Action); the amount in upward trend would increase from the current 2 percent to 94 percent (67 percent with the Proposed Action); and the amount in static trend would decrease from the current 76 percent to 6 percent (29 percent with the Proposed Action).

Upward trend in vegetation condition means that the composition of grasses, forbs and shrubs is becoming more like the potential natural vegetation. Brush encroachment on areas previously controlled is a natural occurrence because under pristine

TABLE 8 - 7

EXPECTED VEGETATION CONDITION IN 15 YEARS UNDER ALTERNATIVE 2, DISCONTINUE LIVESTOCK GRAZING

ALLOTMENT NAME	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
Black Buttes							49	5					49	5
Black Canyon	3,974	668			2,300	252	28,750	2162	13,073	1861	2,458	344	50,555	5287
Canal									511	78			511	78
Clover Creek	3,577	627					14,603	1482	20,167	1749	4,088	391	42,435	4249
Compound									457	75			457	75
Cove Creek							54	7					54	7
Davis Mountain	4,815	1304					2,335	119	27,558	3444	4,322	850	39,030	5717
Dempsey	3,267	504			1,710	183	7,779	961	4,344	545	2,914	392	20,014	2585
Fricke							87	12					87	12
Gwin Ranch									487	84			487	84
Hash Spring									1,928	478	3,818	956	5,746	1434
Hill City Branch							220	23	467	84			687	107
Indian	6,200	1520					11,502	958	12,998	1283	4,648	660	35,348	4421
Kime							250	24	350	51			600	75
King Hill	2,599	325					8,058	627	13,788	1394	923	59	25,368	2405
Kinzie Butte	330	66					5,756	692	2,598	321			8,684	1079
Lava							12,500	594	15,500	825			28,000	1419
Lower Magic	204	50							59	17			263	67
Macon Flat									32,130	3671	6,852	1157	38,982	4828
Magic	2,024	370	1,821	324			120	10	2,087	221			6,052	925
North Gooding	2,420	764	2,720	616			11,562	874	17,040	2136	7,663	1527	41,405	5917
North Shoshone	6,637	1185	16,563	2348	5,643	723	41,570	4718	20,562	2944	2,653	365	93,628	12,283
North Slope									148	21	513	82	661	103
Picabo Cattle	861	220					3,250	325	3,759	465			7,870	1010
Pioneer	1,634	364			1,104	91	3,606	239	418	41			6,762	735
Poison Creek											269	46	269	46
Rattlesnake	465	93			4,819	340	6,697	480	5,225	523	3,075	324	20,281	1760
Richfield Cattle			4,658	1320			1,679	300	15,402	2257	276	75	22,015	3952
Schooler Creek											58	37	58	37
Spud Patch							1,200	110	2,694	378			3,894	488
Spring Creek									478	113	85	18	563	131
Springdale	18	19							292	31			310	50
Struthers							2,392	257					2,392	257
Swinging Bridge									320	45	2,619	395	2,939	440
The Pasture					703	64	215	12					918	76
Ticeska	1,794	419					2,097	320					3,891	739
Tikura							2,443	199	1,200	127			3,643	326
Timmerman East							2,750	225	26,202	2595			28,952	2820
Timmerman West			1,280	220			1,066	130	3,158	370	8,946	1215	14,450	1935
Track			1,138	205					836	111			1,974	316
"46"							208	16					208	16
"101"	1,133	206			360	28	2,645	101					4,138	335
	41,952	8704	28,180	5033	16,639	1681	175,443	15,982	246,236	28,338	56,180	8893	564,630	68,631

TABLE 8-8

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION, EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION, AND EXPECTED CONDITION IN 15 YEARS UNDER ALTERNATIVE 2, DISCONTINUE LIVESTOCK GRAZING

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION - PROPOSED ACTION			FUTURE CONDITION - ALTERNATIVE 2		
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM EXISTING 2/ (PERCENT)	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM PROPOSED ACTION 3/ (PERCENT)
Seeding	36,878	6.5%	44,022	7.8%	19.4%	41,952	7.4%	- 4.7%
Brush Control	30,476	5.4	15,157	2.7	-50.3	28,180	5.0	85.9
Highly Disturbed	38,379	6.8	10,755	1.9	-72.0	16,639	2.9	54.7
Poor	234,931	41.5	222,672	40.1	- 3.5	175,443	31.1	-22.6
Fair	186,157	33.0	223,156	39.5	19.9	246,236	43.6	10.3
Good	37,809	6.7	44,868	7.9	18.7	56,180	9.9	25.2

1/ May not add to 100 percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment under the Proposed Action divided by total acres in the present environment for each vegetation condition category.

3/ The degree of change represents total acres in the expected future environment under this alternative divided by total acres under the expected future environment under the Proposed Action for each vegetation condition category.

TABLE 8 - 9

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 2, DISCONTINUE LIVESTOCK GRAZING

ALLOTMENT NAME	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
Black Buttes	49	49	---	---
Black Canyon	50,555	50,555	---	---
Canal	511	511	---	---
Clover Creek	42,435	41,396	---	1,039
Compound	457	457	---	---
Cove Creek	54	54	---	---
Davis Mountain	39,030	39,030	---	---
Dempsey	20,014	20,014	---	---
Fricke	87	87	---	---
Gwin Ranch	487	287	---	200
Hash Spring	5,746	3,406	---	2,340
Hill City Branch	687	687	---	---
Indian	35,348	35,348	---	---
Kime	600	600	---	---
King Hill	25,368	24,445	---	923
Kinzie Butte	8,684	8,684	---	---
Lava	28,000	8,501	---	19,499
Lower Magic	263	263	---	---
Macon Flat	38,982	38,982	---	---
Magic	6,052	6,052	---	---
North Gooding	41,405	41,405	---	---
North Shoshone	93,628	88,459	---	5,169
North Slope	661	265	---	396
Picabo	7,870	7,870	---	---
Pioneer	6,762	6,762	---	---
Poison Creek	269	269	---	---
Rattlesnake	20,281	20,281	---	---
Richfield Cattle	22,015	22,015	---	---
Schooler Creek	58	58	---	---
Spud Patch	3,894	3,894	---	---
Spring Creek	563	563	---	---
Springdale	310	310	---	---
Struthers	2,392	2,392	---	---
Swinging Bridge	2,939	1,080	---	1,859
The Pasture	918	918	---	---
Ticeska	3,891	3,891	---	---
Tikura	3,643	3,643	---	---
Timmerman East	28,952	28,952	---	---
Timmerman West	14,450	10,950	---	3,500
Track	1,974	1,974	---	---
"46"	208	208	---	---
"101"	4,138	4,138	---	---
Totals	564,630	529,705	000	34,925

conditions the site supported some brush. Conversely, an increase in the grass and forb component of the vegetation community would be expected on those areas where brush is presently overabundant because the grasses and forbs have been weakened in the past by repeated livestock grazing during the critical green period. The vegetation would become more like the potential vegetation on all major vegetation zones (shown in Table 2-9) except the Productive Seeding Zone, the Agricultural Land Zone, and the Recent Lava Flows and Barren Zone. Although the potential vegetation would not be entirely restored within 15 years, the trend would be toward such an outcome.

In summary, discontinued livestock grazing would greatly improve vigor of forage species. Yearly herbaceous litter accumulation would increase by 42,867,200 pounds the first year and would increase annually thereafter as forage plant vigor improved. Vegetation condition would improve dramatically on 94 percent (529,705 acres) of the ES Area that would trend toward the potential natural vegetation. The specific vegetation objectives of the Proposed Action would be fully met in 15 years under discontinued livestock grazing.

Impacts on Terrestrial Wildlife

General Impacts. The majority of mammals and birds that are either directly or indirectly dependent upon vegetation would benefit by the complete removal of livestock. Food would be abundant for all herbivorous species until such time that populations could respond to the excess forage by increasing their numbers accordingly. Predators would respond concomitantly with their prey. The increased cover would increase the hunting difficulty for predators. However, with increased prey numbers the predators would have fewer problems capturing sufficient prey.

Impacts on Big Game.

Mule Deer. Mule deer would initially benefit by the removal of livestock. Competition for spring forage would be eliminated, and the browse produced on the winter ranges would be mostly available for wintering deer. If other factors such as hunting pressure, disease, etc., remain unchanged, there should be a major increase in resident deer populations and a minor but still significant increase in winter migrants. Winter populations would increase approximately 5 percent over the predictions for the Proposed Action.

Shrubs could be detrimentally impacted through competition for moisture, etc., with grasses and forbs. However, the timing of this shrub response would depend on the existing vegetation condition. Adverse shrub impacts could occur within fifteen years on areas presently in high fair or good condition. On areas where the present condition is low fair or poor, it would be expected to take longer than fifteen years before the shrubs would be reduced through competition with grasses and forbs.

Elk. Elk populations would experience a major increase as a result of discontinued livestock grazing. Provided all other factors remain unchanged, as vegetation condition improves, increasing grasses and forbs, elk would be expected to expand their ranges, leading to an estimated 5 percent greater increase in animal numbers than would occur under the Proposed Action.

Antelope. The response of antelope would be similar to that of other big game. A significant population increase would result due to the improved vegetation conditions.

Impacts on Small Mammals. The increased amount of available vegetation would result in increased food and cover for the many small mammals. The improved habitat conditions would produce an increase in population numbers.

Impacts on Birds.

Sage Grouse. Sage grouse would be expected to significantly increase their population numbers. The increased availability of grasses and forbs would tend to improve forage conditions and nesting habitat, subsequently increasing productivity.

The meadows and riparian habitats would become overgrown with grass and grass-like species, making them less desirable for grouse than if they were periodically grazed. However, it does not appear that this would significantly affect grouse populations.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves. The population response to discontinued livestock grazing would be similar to that described for sage grouse. With the exception of the pheasants, which depend primarily on agricultural land, the populations of all other birds would be expected to increase. This increase would result from the substantial improvement in both the quality and quantity of food and cover.

Waterfowl. The nesting cover adjacent to water areas would be greatly increased, resulting in an increase in nesting birds and nesting success. The increased number of nesting birds, in conjunction with increased nesting success, would lead to significantly (60 percent increase in the number of nests) higher waterfowl populations.

Impacts on Threatened, Endangered, and Sensitive Wildlife. The discontinuance of grazing would not impact the bald eagle. Sensitive species that rarely occur within the ES Area presently would not be impacted. Burrowing owls would be beneficially impacted because of the increase in small mammals and insects (prey) resulting from the improved vegetation condition. Nesting burrows would not be threatened with destruction since no seeding projects would be proposed.

Summary. The net impacts resulting from Alternative 2, Discontinue Livestock Grazing, would enhance practically all the wildlife species inhabiting the ES Area.

Big game populations would increase significantly over the existing situation and would be expected to be slightly (5 percent) higher than under the Proposed Action.

Upland game and waterfowl nest sites would increase approximately 65 and 60 percent, respectively, over existing nest site numbers.

Impacts on Fisheries

Discontinued livestock grazing would improve the aquatic habitat on approximately 29 miles (40 percent) of the streams within the ES Area. The improved conditions would include improved riparian vegetation, reduced bank sloughing, and improved aquatic habitat. However, the final outcome of these improvements on the stream fisheries would be very slight. The low flows in the majority of the streams control the significance of the fishery. It is apparent that no matter how good the aquatic habitat is, many of the streams would never produce a substantial fishery because of low water flows and the resultant high water temperatures.

Impacts on Cultural Resources

Under this alternative damage to cultural resource sites from livestock trampling and sheet erosion generated by trampling would be eliminated. This would constitute a significant improvement over the present situation. Benefits would be most effectively realized in areas, such as major water sources, where livestock congregate. Intermingled private and State lands would experience continued, or perhaps increased, damage depending on the intensity of grazing that would occur.

Livestock trailing could have a slight adverse impact to cultural resource sites because the animals would trample any sites passed over. In any given year these impacts would be small, but if the same routes were used every year, the cumulative effects expected to sites would constitute a moderate to severe impact.

Some adverse impacts could result from the removal of pasture fences and construction of fences around private and State lands. Since the new fence lines would reflect legal boundaries, they would be difficult or impossible to relocate to avoid cultural resources. Depending on the number and significance of the sites encountered (presently unpredictable), the cost of conducting archaeological salvage could be substantial.

Should intensified human activity result from increased wildlife harvest, the risk of vandalism to cultural resource sites would increase.

Impacts on Visual Resources

The visual resources would be restored in the long term to compose an entirely natural landscape on public lands within the ES Area. Improved vegetation conditions would enhance scenic quality and could result in higher Visual Resource Management (VRM) classes for some areas (see Chapter 2 for VRM procedures). However, additional fencing would undoubtedly be constructed on the boundaries between public land and State or private land to prevent trespass. These fences would create new contrasts between the grazed and ungrazed areas.

Impacts on Recreation Resources

Hunting opportunities would be increased in proportion to the increases in game populations, assuming seasons and bag limits were adjusted accordingly. Other activities such as sightseeing, hiking, and camping would also be enhanced by the increased forage and lack of conflict with livestock grazing. If new fences were constructed on boundaries between public land and State or private land, public access in some areas of interspersed ownership would be adversely affected. Also, road access across private property might be blocked by the landowners.

Impacts on Wilderness

The wilderness inventory and analysis described in Chapter 2 would continue unaffected by this alternative. No wilderness areas would be lost or impaired, because if areas having wilderness characterisitics were identified, any conflicting activities would be restricted until Congress acts on designation of the areas.

Impacts on Livestock Grazing

Discontinuing livestock grazing in the ES Area would have only adverse affects on livestock grazing, both in the short and long terms. This alternative would also have major socioeconomic implications, which are discussed in "Impacts on Socioeconomic Conditions."

The 112 livestock operations using public lands in the ES Area vary widely. Because the public lands are grazed during the spring and fall by sheep and cattle, they provide a necessary link between the winter livestock operation on the base property and summer grazing on higher elevation private land, public land, and/or National Forest land. Thirty-eight livestock operators would have to alter their established mode of operation during the spring and fall grazing periods. Some would not have the flexibility to absorb the necessary change.

Seventy-four livestock operators graze cattle in the ES Area during the spring, summer, and fall. Unless these existing livestock operations could be altered to fit entirely on the home ranch and/or other private pasture, the season-long, cow-calf operators would have to reduce herd size and/or change their entire farm or ranch plan. Many would not have the flexibility to absorb the necessary change.

Because there is wide variation in the dependence upon public-land forage, there would be a correspondingly wide variation in the degree of impact. It is likely that some individuals could not or would not adjust to the change and would choose to sell or lease their ranches. Other operators would probably cut back the size of their breeding stock until a modified yearlong operation could be developed. Individual livestock operations presently having a high percentage of public land forage, and those operations involving larger numbers of livestock, would experience the greatest impacts.

In summary, 112 livestock operators would not have the use of public land forage. This would require 38 operators who graze only during spring and fall to substantially alter their established mode of operation; some would probably be unable to do so. The other 74 operators who graze season long would have to alter their entire farm or ranch plan; again, it is probable that many would be unable to do so.

Impacts on Socioeconomic Conditions

Population. Population trends and levels would not differ significantly from those identified in Chapter 2, "Socioeconomic Conditions."

Employment. The livestock industry would realize a direct loss of 32 jobs as a result of implementing this alternative. An additional 11 jobs would be lost to the five-county economy as a secondary impact. These 11 lost jobs would be spread through eight different sectors of the economy. These impacts are displayed in Table 8-10.

Income. Under this alternative all livestock grazing on the public lands would be eliminated. This represents a total reduction in both active qualified demand (83,120 AUMs) and the five-year average licensed use (53,731 AUMs). Individual losses from active qualified demand range from 4 to 8,329 AUMs and from average licensed use, 1 to 6,023 AUMs.

TABLE 8-10

SECONDARY EMPLOYMENT LOSSES
ALTERNATIVE NO. 2: DISCONTINUE LIVESTOCK GRAZING

INDUSTRY	NUMBER OF JOBS
AGRICULTURE	
Livestock (Except Dairy-Poultry)	1
Other	1
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	2
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	2
TRANSPORTATION AND COMMUNICATION	1
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	2
FINANCE, INSURANCE, REAL ESTATE	1
SERVICES	1
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	11

Source: Bureau of Land Management, Idaho State Office, Dynamic Regional Analysis Model (DYRAM), November 1978

To compensate for reductions in grazing on public land, livestock operators would have to reduce herd size; buy or raise additional hay; convert irrigated pastureland; and/or buy or rent additional irrigated or dryland pasture.

The impact of this loss of AUMs from the public lands would be a major reduction in livestock and livestock-related income in the five-county economic study area. The primary reduction in income would be $464,562. The individual rancher with the greatest loss from five-year average use (6,023 AUMs) would lose $47,642 in income. The smallest individual loss of income would be $7.91 while the average loss (560 AUMs) would be $4,430.

These reductions in income would create secondary impacts throughout the study area. An additional loss of income of $115,290 would occur as a result of the initial loss of $465,000 in the livestock industry. Income lost annually by industry is shown in Table 8-11. The total annual loss of income, both primary ($465,000 to the livestock industry) and secondary ($115,290 throughout the economy), would total $580,290 for the study area. This compares with a total 1974 five-county income of $172,213,000 (Chapter 2, "Socioeconomic Conditions"). Thus, as a result of implementing this alternative, the total loss of income in the study area would be approximately 0.3 percent of the total income generated. Total income losses in the livestock industry ($465,000 primary plus $16,800 secondary) would be $481,800. This compares to the total 1974 five-county farm income of $34,856,000 (see Chapter 2, "Socioeconomic Conditions"). Thus, the livestock industry losses resulting from implementing this alternative would approximate 1.4 percent of the farm income in the study area.

Social Values and Attitudes. The social impacts resulting from this alternative are the same in kind as for the Proposed Action. Any variation would be in degree of intensity and this cannot be quantified.

TABLE 8-11

SECONDARY INCOME LOSSES BY INDUSTRY
ALTERNATIVE NO. 2: DISCONTINUE LIVESTOCK GRAZING

INDUSTRY	AMOUNT
AGRICULTURE	
Livestock	$ 16,800
Other	13,030
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	17,480
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	17,480
TRANSPORTATION AND COMMUNICATION	17,140
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	17,140
FINANCE, INSURANCE, REAL ESTATE	6,810
SERVICES	9,410
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	$115,290

Source: Bureau of Land Management, Idaho State Office, Dynamic Regional Analysis Model (DYRAM), November 1978

ALTERNATIVE 3:

LOWER LEVEL STOCKING

Description of Alternative 3

In order to analyze a significantly lower stocking level and concurrently reduce or eliminate many of the unmitigated adverse impacts described in Chapter 5, an initial stocking rate 50 percent lower than that of the Proposed Action was chosen for analysis in this alternative. The initial stocking rate of 19,147 AUMs would be approximately 36 percent of the current inventoried grazing capacity of 53,900 AUMs. Forage not allocated to livestock would be used by wildlife or would simply remain on the ground in its natural state.

Seasons of use, allotment boundaries, and pasture boundaries would be the same as under the Proposed Action. Implementation of grazing systems, installation of range improvements, completion of land treatments, and protection of unallotted areas from livestock grazing would also be identical to the Proposed Action.

Management of resources other than livestock grazing would progress normally. Trespass, easements, and corssing permits would be handled under existing laws and regulations.

Analysis of Alternative 3

The cause agents for this alternative are the same as for the Proposed Action, which are: (1) adjustment of stocking rate (forage allocation), (2) implementation of grazing systems, (3) completion of range improvements including land treatments, and (4) protection of certain areas from livestock grazing. The generalized adverse and beneficial short- and long-term impacts of all these cause agents were analyzed in Chapter 3 and are not repeated here. The difference between this alternative and the Proposed Action is the level of livestock stocking rate. Therefore, the impacts of the forage allocation cause agent will be emphasized in this section.

Impacts on Soils

Implementation of this alternative would have an overall beneficial impact on soils by improving cover, increasing soil productivity, and reducing erosion. Cover would increase by an estimated 11 percent, and erosion rates would decrease 11 percent from a present rate of 1.00 ac ft/sq mi/yr to 0.89 ac ft/sq mi/yr. This change would be more than twice the 5 percent decrease anticipated under the Proposed Action.

Under this alternative, low erosion rates would be expected on three allotments (32,448 acres), moderate rates on 21 allotments (206,406 acres) and high rates on 18 allotments (325,776 acres). Under the Proposed Action, it is anticipated that the same three allotments would have low erosion rates, but 20 allotments (165,007 acres) would have moderate erosion rates, and 19 allotments (367,175 acres) would have high erosion rates. A summary of erosion rates and predicted changes in erosion rates is given in Appendix Table A2-1.

Impacts resulting from implementation of range improvements would be the same as under the Proposed Action (see Chapter 3, "Impacts on Soils").

The impacts occurring on the proposed unallotted areas would be similar to those occurring under the Proposed Action (see Chapter 3 "Impacts on Soils"). The only difference between this alternative and the Proposed Action would be that erosion rates on the 625 acres proposed for inclusion into allotments would decrease 11-16 percent rather than 5-16 percent.

Impacts on Water Resources

Impacts from the Lower Level Stocking Alternative would not differ greatly from those of the Proposed Action. Riparian areas would continue to be utilized, and improvement in channel stability would depend on the effectiveness of distribution efforts in keeping livestock from the riparian zone. Fewer livestock in the riparian zone could lessen the streamside disturbance. Impacts from this alternative would generally be slightly less than those of the Proposed Action. Runoff is not expected to be greatly different from the Proposed Action, and erosion rates would decrease 11 percent compared to a 5 percent decrease under the Proposed Action. Overall water quality impacts would be approximately the same as under the Proposed Action, with potential for decreasing sedimentation problems.

Under this alternative, water requirements would be 40-50 acre-feet per year less than the Proposed Action, but this is considered an insignificant volume when compared to the total water used in the ES Area.

Impacts on Vegetation

This alternative would require a downward adjustment from 58,731 AUMs annual use (1972-1976 average) to 19,147 AUMs, a 67 percent reduction. Vegetation grazed annually by livestock and big game would be 23,794 AUMs (19,035,200 pounds air-dried forage). This would be 56 percent of the amount under the Proposed Action (4,647 wildlife AUMs plus 38,138 livestock AUMs, 34,228,000 pounds).

One immediate and long-term beneficial effect from the downward adjustment on the overall vegetation resource would be a reduction in the amount of herbage consumed by livestock. Presently, an estimated 66,040,000 pounds of palatable grasses and forbs are being produced annually on public lands in the ES Area. Under this alternative, consumption would decrease from 46,984,800 to 15,317,600 pounds annually, leaving 31,667,200 pounds more vegetation on the land each year.

Under present stocking levels approximately 11.7 percent of total vegetation production is being consumed as forage by livestock. With this alternative that consumption would decrease to 3.8 percent. The impact of leaving more herbaceous (nonwoody) plant material is expected to be greater than that implied by the percentage decrease of total production harvested by livestock. Increased herbaceous vegetation left unharvested would remain as litter and help protect the soil from wind and/or water erosion, as described in Chapter 3, "Impacts on Vegetation".

Improved vigor of forage plants is expected from reduced grazing with the lower level stocking alternative. Considered alone, adjustment in the stocking rate would lessen the grazing pressure on less desirable areas such as slopes above 20 percent and areas greater than one mile from water. However, grazing pressure would remain relatively uniform within the areas grazed. The lower number of livestock would simply remain in the desirable grazing areas for a longer period of time and would not be forced to utilize the less desirable areas (Hormay 1970). The grazing systems, as in the Proposed Action, would reduce this effect. Generally, much less total area would be grazed by livestock. Forage plants in the ungrazed or lightly grazed areas would, in a few years, gain increased vigor, develop healthy root systems, store abundant food reserves, produce viable seeds, and provide an abundance of plant litter.

The impacts from the construction and physical presence of range improvements would be the same as those described for the Proposed Action. The construction phase of the water developments (Table 3-1) would remove 85 acres from production; over the long term, 166 acres would be removed from production. Fences, cattleguards and stock trails would disturb 172 acres in the short term and 54 acres in the long term. Land treatments would disturb the vegetation on 5,852 acres in the short term. No long-term disturbance would be anticipated because either seeded forage plant species, or native forage species released through brush control, would gain vigor and fully occupy the treated sites.

The problem of heavy utilization of yearly forage production (71 percent presently, 46 percent under Proposed Action) would be resolved because only 23 percent would be utilized.

Presently 65 percent of the total yearly livestock grazing takes place during the early spring to early summer green period. Under this alternative, this problem would be resolved on about 93 percent of the ES Area. As under the Proposed Action, grazing management systems which incorporate periodic rest during the critical spring and early summer growing seasons would be expected to improve forage plant vigor and reproductive success. One exception would be the small single fenced areas for which annual spring grazing is proposed (4,143 acres, less than 1 percent of the ES Area) shown in Table 1-7. The other exception would be on an estimated 34,000 acres (6 percent of the ES Area), within the Davis Mountain, King Hill, Macon Flat, Picabo, and Timmerman East Allotments (see discussion of grazing system deficiencies for each of these five allotments under "Cumulative Impacts, Impacts to Vegetation" in Chapter 3).

The present problems of poor livestock distribution and repeated grazing during the growing season on the same area would be greatly reduced by the adjustments in stocking rate and implementation of the grazing management systems.

The specific objectives of the Proposed Action (Table 1-4) would be essentially met on all 42 allotments under this alternative (see analysis description in Chapter 3, "Imapcts on Vegetation").

The same vegetation response on 70 unallotted areas, totaling 9,518 acres, would be expected under this alternative as under the Proposed Action.

Vegetation condition would improve over the next fifteen years under lower level stocking and more intensive grazing management. The expected vegetation condition and production (expressed in AUMs) is shown in Table 8-12 for each of four condition categories and two man-caused categories (seeding and brush control) by grazing system. These predictions are best professional estimates based on applicable soils data, field samples, and previously observed responses of vegetation. Table 8-13 is a summary comparison of existing vegetation condition and the expected condition in fifteen years under lower level stocking. The number of seedings and brush control acres would increase about 2 percent under this alternative, mainly as a result of seeded species regaining vigor and producing more than 15 percent of the total herbage yield on previously seeded sites and the land treatments on 5,852 acres.

The amount of public land in the ES Area in highly disturbed or poor condition would change from the existing 48 percent to 39 percent of the total under this alternative (42 percent with the Proposed Action). Public land in fair and good condition presently makes up 40 percent of the total; with this alternative this figure would increase to 48 percent (47 percent with Proposed Action).

Three classes of vegetation trend are shown in Table 8-14. The acres within each trend class are displayed by grazing system. The amount of public land in downward trend would be expected to change from 22 to 2 percent (4 percent with the Proposed Action); the amount in upward trend would change from 2 to 64 percent (67 percent with the Proposed Action); and the amount in static trend would change from 76 to 34 percent (29 percent with the Proposed

TABLE 8 - 12

EXPECTED VEGETATION CONDITION IN 15 YEARS
UNDER ALTERNATIVE 3. LOWER LEVEL STOCKING
(Public Land Only)

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
I. REST ROTATION (RR)														
A. RR With Three Treatments (RR-3)														
Dempsey Allotment	3,267	479	0	0	1,783	168	7,843	872	4,441	508	2,680	322	20,014	2,349
Macon Flat Allotment	0	0	0	0	0	0	17,100	1,595	20,176	2,394	1,704	239	38,982	4,228
**North Gooding Allotment	2,420	739	2,720	580	0	0	2,094	281	10,209	1,271	7,145	1,467	24,588	4,338
County Line Pasture														
Flat Top Pasture														
Peck Meadow Pasture														
Picabo Allotment	861	177	0	0	0	0	4,027	325	2,614	346	368	50	7,870	898
**Canal Allotment	0	0	0	0	0	0	0	0	399	60	0	0	399	60
North Pasture														
Compound Allotment	0	0	0	0	0	0	0	0	457	72	0	0	457	72
**King Hill Allotment	2,599	264	0	0	0	0	14,106	1,056	2,786	254	843	56	20,334	1,630
Bellmare & South Pastures														
Hog Creek Pasture														
Walker Reservoir Pasture														
Lava Allotment	2,000	400	2,500	420	0	0	5,540	500	17,960	730	0	0	28,000	2,050
Struthers Allotment	0	0	0	0	0	0	0	0	2,392	241	0	0	2,392	241
Ticeska Allotment	1,794	413	0	0	0	0	2,097	304	0	0	0	0	3,891	717
Track Allotment	0	0	1,138	205	0	0	0	0	836	98	0	0	1,974	303
Hill City Branch Allotment	0	0	0	0	0	0	220	21	467	73	0	0	687	94
Kime Allotment	0	0	0	0	0	0	250	22	350	46	0	0	600	68
TOTAL FOR RR-3	12,941	2,472	6,358	1,205	1,783	168	53,277	4,976	63,089	6,093	12,740	2,134	150,188	17,048
B. RR With Four Treatments (RR-4)														
Pioneer Allotment	1,634	409	0	0	1,104	110	3,606	422	418	52	0	0	6,762	993
Richfield Cattle Allotment	0	0	4,658	1,246	0	0	1,780	268	15,577	2,086	0	0	22,015	3,600
**Clover Creek Allotment	3,577	517	0	0	346	36	11,219	1,135	1,522	161	0	0	16,664	1,849
Cliss Point Pasture														
Bray Lake Pasture														
Canal Pasture														
White Arrow Spring Pasture														
Kinzie Butte Allotment	330	94	1,000	150	0	0	4,756	597	2,598	373	0	0	8,684	1,214
TOTAL FOR RR-4	5,541	1,020	5,658	1,396	1,450	146	21,361	2,422	20,115	2,672	0	0	54,125	7,656
C. RR With Five Treatments (RR-5)														
Rattlesnake Allotment	465	116	0	0	2,450	187	9,137	805	4,974	448	3,255	332	20,281	1,888
TOTAL FOR RR-5	465	116	0	0	2,450	187	9,137	805	4,974	448	3,255	332	20,281	1,888
II. MODIFIED REST ROTATION (MRR)														
A. MRR With Three Treatments (MRR-3)														
**Black Canyon Allotment	128	26	0	0	0	0	10,285	669	11,433	1,582	1,595	214	23,441	2,491
City of Rocks Pasture														
Connet Springs Pasture														
Mormon Reservoir Pasture														
**Black Canyon Allotment	3,846	609	0	0	2,525	255	18,805	1,477	1,328	155	610	82	27,114	2,578
Dead Horse Pasture														
Four Mile Pasture														
Open Crossing Pasture														
North Shoshone Allotment	6,637	1,385	16,563	3,008	5,643	881	41,570	6,320	20,562	3,283	2,653	507	93,628	15,384
TOTAL FOR MRR-3	10,611	2,020	16,563	3,088	8,168	1,136	70,660	8,466	33,323	5,020	4,858	803	144,183	20,453
B. MRR With Four Treatments (MRR-4)														
***Davis Mountain Allotment	2,617	470	0	0	0	0	3,400	172	11,312	690	1,420	142	18,749	1,474
Canal Pasture														
Lower Ferguson Pasture														
Lower Radermacher Pasture														
Onion Patch Pasture														
Timmerman East Allotment	0	0	0	0	0	0	9,100	690	19,852	1,650	0	0	28,952	2,340
TOTAL FOR MRR-4	2,617	470	0	0	0	0	12,500	862	31,164	2,340	1,420	142	47,701	3,814
III. DEFERRED ROTATION (DR)														
A. DR With Two Treatments (DR-2)														
1. DR-2 With Turnout to Seed Ripe Defer Until After Seed Ripe														
**Canal Allotment	112	28	0	0	0	0	0	0	0	0	0	0	112	28
South Pasture														
**Clover Creek Allotment	0	0	0	0	0	0	3,177	202	20,526	1,495	2,068	172	25,771	1,869
Coyote Hill Pasture														
Monument Gulch Pasture														
Gwin Ranch	0	0	0	0	0	0	0	0	487	82	0	0	487	82
Lower Magic Allotment	204	50	0	0	0	0	0	0	59	16	0	0	263	66
Spring Creek Allotment	0	0	0	0	0	0	0	0	563	113	0	0	563	113
Spud Patch Allotment	0	0	0	0	0	0	2,864	229	1,030	176	0	0	3,894	405
The Pasture Allotment	0	0	0	0	695	67	223	23	0	0	0	0	918	90
Tikura Allotment	0	0	0	0	0	0	3,243	240	400	40	0	0	3,643	280
TOTAL FOR 1. DR-2	316	78	0	0	695	67	9,507	694	23,065	1,922	2,068	172	35,651	2,933

TABLE 8 -12 Continued

EXPECTED VEGETATION CONDITION IN 15 YEARS
UNDER ALTERNATIVE 3, LOWER LEVEL STOCKING
(Public Land Only)

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
2. DR-2 With Turnout to 6/15; Defer Until After 10/16														
**North Gooding Allotment Dog Creek Pasture Willows Pasture	0	0	0	0	0	0	9,768	637	6,531	840	518	41	16,817	1,518
Swinging Bridge Allotment	0	0	0	0	0	0	20	2	300	43	2,619	389	2,939	434
**Timmerman West Allotment Wedgetop Pasture Well Pasture	0	0	1,280	193	0	0	1,066	128	3,158	241	5,726	412	11,230	974
Total for 2. DR-2	0	0	1,280	193	0	0	10,854	767	9,989	1,124	8,863	842	30,986	2,926
B. DR With Three Treatments (DR-3) Two Before and One After Seed Ripe														
***Davis Mountain Allotment Deer Creek Pasture Upper Ferguson Pasture Upper Radermacher Pasture	2,198	746	0	0	0	0	825	86	14,746	2,331	1,225	284	18,994	3,447
Magic Allotment	2,024	387	1,821	335	0	0	0	0	1,194	142	1,013	120	6,052	984
TOTAL FOR DR-3	4,222	1,133	1,821	335	0	0	825	86	15,940	2,473	2,238	404	25,046	4,431
IV. DEFEREMENT OF USE (DU)														
A. DU Until Past Peak of Flowering After 7/01 (DUF)														
***Davis Mountain Allotment Long Gulch Pasture	0	0	0	0	0	0	0	0	1,147	247	140	42	1,287	289
North Slope Allotment	0	0	0	0	0	0	32	4	233	32	396	58	661	94
Total for DUF	0	0	0	0	0	0	32	4	1,380	279	536	100	1,948	383
B. DU Until Seed Ripe Time; After 7/20 (DUS)														
Cove Creek Allotment	0	0	0	0	0	0	54	6	0	0	0	0	54	6
**King Hill Allotment North Pasture	0	0	0	0	0	0	1,234	137	3,720	421	80	12	5,034	570
Schooler Creek Allotment	0	0	0	0	0	0	0	0	45	27	13	8	58	35
TOTAL FOR DUS	0	0	0	0	0	0	1,288	143	3,765	448	93	20	5,146	611
C. DU Until Dormant Season After 8/20 (DUD)														
"101 Allotment	1,133	198	0	0	184	25	2,821	240	0	0	0	0	4,138	463
TOTAL FOR DUD	1,133	198	0	0	184	25	2,821	240	0	0	0	0	4,138	463
V. MODIFIED DEFERRED ROTATION (MDR)														
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments With Cattle (MDR-2)														
Hash Spring Allotment	0	0	40	10	0	0	294	74	1,830	428	3,582	865	5,746	1,377
TOTAL FOR MDR-2	0	0	40	10	0	0	294	74	1,830	428	3,582	865	5,746	1,377
B. MDR With Rotation of Use Periods In Five Pastures (MDR-5)														
Indian Allotment	5,995	1,282	0	0	256	26	12,701	1,045	12,216	1,214	4,180	548	35,348	4,115
TOTAL FOR MDR-5	5,995	1,282	0	0	256	26	12,701	1,045	12,216	1,214	4,180	548	35,348	4,115
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)														
Black Buttes Allotment	0	0	0	0	0	0	49	6	0	0	0	0	49	6
"46" Allotment	0	0	0	0	0	0	208	18	0	0	0	0	208	18
Fricke Allotment	0	0	0	0	0	0	87	10	0	0	0	0	87	10
Poison Creek Allotment	0	0	0	0	0	0	269	46	0	0	0	0	269	46
Springdale Allotment	19	15	0	0	0	0	0	0	292	31	0	0	310	46
**Timmerman West Allotment Mahoney Flat Pasture	0	0	0	0	0	0	0	0	0	0	3,220	315	3,220	315
TOTAL FOR ASG	18	15	0	0	0	0	613	80	292	31	3,220	315	4,143	441
TOTALS ACRES	43,859		31,720		14,986		205,870		221,142		47,053		564,630	
TOTALS AUMS		8,804		6,147		1,755		20,664		24,492		6,677		68,539

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***), that allotment has three distinct types of grazing systems.

TABLE 8 - 13

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION, EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION, AND EXPECTED CONDITION IN 15 YEARS UNDER ALTERNATIVE 3, LOWER LEVEL STOCKING

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION - PROPOSED ACTION			FUTURE CONDITION - ALTERNATIVE 3		
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM EXISTING 2/ (PERCENT)	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM PROPOSED ACTION 3/ (PERCENT)
Seeding	36,878	6.5%	44,022	7.8%	19.4%	43,859	7.8%	- 0.4%
Brush Control	30,476	5.4	15,157	2.7	-50.3	31,720	5.6	109.3
Highly Disturbed	38,379	6.8	10,755	1.9	-72.0	14,986	2.7	39.3
Poor	234,931	41.6	226,672	40.1	- 3.5	205,870	36.5	- 9.2
Fair	186,157	33.0	223,156	39.5	19.9	221,142	39.2	- 0.9
Good	37,809	6.7	44,868	7.9	18.7	47,053	8.3	4.9

1/ May not add to 100 percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment under the Proposed Action divided by total acres in the present environment for each vegetation condition category.

3/ The degree of change represents total acres in the expected future environment under this alternative divided by total acres under the expected future environment under the Proposed Action for each vegetation condition category.

TABLE 8-14

EXPECTED VEGETATION TREND
IN 15 YEARS UNDER ALTERNATIVE 3
LOWER LEVEL STOCKING
(By Grazing System)

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
I. REST ROTATION (RR)				
A. RR With Three Treatments (RR-3)				
Dempsey Allotment	20,014	20,014	---	---
Macon Flat Allotment	38,982	13,780	4,610	20,592
**North Gooding Allotment County Line Pasture Flat Top Pasture Peck Meadow Pasture	24,588	4,917	---	19,671
Picabo Allotment	7,870	2,510	592	4,768
**Canal Allotment North Pasture	399	399	---	---
Compound Allotment	457	---	---	457
**King Hill Allotment Bellmare & South Pastures Hog Creek Pasture Walker Reservoir Pasture	20,334	2,600	1,652	16,082
Lava Allotment	28,000	8,501	---	19,499
Struthers Allotment	2,392	1,792	---	600
Ticeska Allotment	3,891	3,891	---	---
Track Allotment	1,974	842	---	1,132
Hill City Branch Allotment	687	687	---	---
Kime Allotment	600	600	---	---
TOTAL FOR RR-3	150,188	60,533	6,854	82,801
B. RR With Four Treatments (RR-4)				
Pioneer Allotment	6,762	5,128	---	1,634
Richfield Cattle Allotment	22,015	16,516	---	5,499
**Clover Creek Allotment Bliss Point Pasture Bray Lake Pasture Canal Pasture White Arrow Spring Pasture	16,664	16,664	---	---
Kinzie Butte Allotment	8,684	7,357	---	1,327
TOTAL FOR RR-4	54,125	45,665	000	8,460
C. RR With Five Treatments (RR-5)				
Rattlesnake Allotment	20,281	20,281	---	---
TOTAL FOR RR-5	20,281	20,281	000	000
II. MODIFIED REST ROTATION (MRR)				
A. MRR With Three Treatments (MRR-3)				
**Black Canyon Allotment City of Rocks Pasture Connet Springs Pasture Mormon Reservoir Pasture	23,441	23,441	---	---
**Black Canyon Allotment Dead Horse Pasture Four Mile Pasture Open Crossing Pasture	27,114	27,114	---	---
North Shoshone Allotment	93,628	70,428	---	23,200
TOTAL FOR MRR-3	144,183	120,983	000	23,200

TABLE 8-14 Continued

EXPECTED VEGETATION TREND
IN 15 YEARS UNDER ALTERNATIVE 3
LOWER LEVEL STOCKING
(By Grazing System)

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREN		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
B. MRR With Four Treatments (MRR-4)				
***Davis Mountain Allotment	18,749	18,749	---	---
Canal Pasture				
Lower Ferguson Pasture				
Lower Radermacher Pasture				
Onion Patch Pasture				
Timmerman East Allotment	28,952	---	3,552	25,400
TOTAL FOR MRR-4	47,701	18,749	3,552	25,400
III. DEFERRED ROTATION (DR)				
A. DR With Two Treatments (DR-2)				
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe				
**Canal Allotment	112	---	---	112
South Pasture				
**Clover Creek Allotment	25,771	24,632	---	1,139
Coyote Hill Pasture				
Monument Gulch Pasture				
Gwin Ranch Allotment	487	---	---	487
Lower Magic Allotment	263	---	---	263
Spring Creek Allotment	563	---	---	563
Spud Patch Allotment	3,894	2,096	610	1,188
The Pasture Allotment	918	918	---	---
Tikura Allotment	3,643	1,821	---	1,822
TOTAL FOR 1. DR-2	35,651	29,467	610	5,574
2. DR-2 With Turnout to 6/15; Defer Until After 10/16				
**North Gooding Allotment	16,817	3,363	---	13,454
Dog Creek Pasture				
Willows Pasture				
Swinging Bridge Allotment	2,939	580	---	2,359
**Timmerman West Allotment	11,230	---	---	11,230
Wedgetop Pasture				
Well Pasture				
TOTAL FOR 2. DR-2	30,986	3,943	000	27,043
B. DR With Three Treatments (DR-3) Two Before and One After Seed Ripe				
***Davis Mountain Allotment	18,994	11,258	688	7,048
Deer Creek Pasture				
Upper Ferguson Pasture				
Upper Radermacher Pasture				
Magic Allotment	6,052	1,625	---	4,427
TOTAL FOR DR-3	25,046	12,883	688	11,475

TABLE 8-14 Continued

EXPECTED VEGETATION TREND
IN 15 YEARS UNDER ALTERNATIVE 3
LOWER LEVEL STOCKING
(By Grazing System)

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
IV. DEFERMENT OF USE (DU)				
A. DU Until Past Peak of Flowering; After 6/20 (DUF)				
***Davis Mountain Allotment Long Gulch Pasture	1,287	1,287	---	---
North Slope Allotment	661	---	---	661
TOTAL FOR DUF	1,948	1,287	000	661
B. DU Until Seed Ripe Time; After 7/20 (DUS)				
Cove Creek Allotment	54	54	---	---
**King Hill Allotment North Pasture	5,034	4,548	---	486
Schooler Creek Allotment	58	58	---	---
TOTAL FOR DUS	5,146	4,660	000	486
C. DU Until Dormant Season After 8/20 (DUD)				
"101" Allotment	4,138	4,138	---	---
TOTAL FOR DUD	4,138	4,138	000	000
V. MODIFIED DEFERRED ROTATION (MDR)				
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments with Cattle (MDR-2)				
Hash Spring Allotment	5,746	2,406	---	3,340
TOTAL FOR MDR-2	5,746	2,406	000	3,340
B. MDR With Rotation of Use Periods In Five Pastures (MDR-5)				
Indian Allotment	35,348	35,348	---	---
TOTAL FOR MDR-5	35,348	35,348	000	000
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)				
Black Buttes Allotment	49	26	---	23
"46" Allotment	208	208	---	---
Fricke Allotment	87	87	---	---
Poison Creek Allotment	269	---	---	269
Springdale Allotment	310	---	---	310
**Timmerman West Allotment Mahoney Flat Pasture	3,220	---	---	3,220
TOTAL FOR ASG	4,143	321	000	3,822
TOTAL FOR ALL GRAZING SYSTEMS	564,630	360,664	11,704	192,262

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***), that allotment has three distinct types of grazing systems.

Action). The reason for a lower percentage of public land in upward trend and a higher percentage in static trend than under the Proposed Action is that some existing seedings would improve rapidly over the first few years under this alternative. However, they would then level off; thereby neither improving nor decreasing in productivity.

In summary, under this alternative forage plant vigor, seed production, and litter accumulation would improve rapidly. Average utilization of forage species would decrease from 71 percent to 23 percent. Litter accumulation for soil protection would increase by 31,667,200 pounds the first year and would increase annually thereafter as vigor and production improved. Existing problems of heavy utilization of yearly forage production, grazing during the critical green period, poor livestock distribution, and repeated grazing of the same area during the growing season would be essentially eliminated. Vegetation trend would be upward on 64 percent of the ES Area after 15 years. It would become static at a higher condition level on 34 percent of the area. Only about 2 percent of the area would be in a downward trend primarily as a result of cattle remaining in favored grazing areas in the spring on five allotments. Despite these minor problems the specific objectives of the Proposed Action would be met in 15 years on all 42 proposed allotments.

Impacts on Terrestrial Wildlife

General Impacts. The impacts resulting from this alternative would be very similar to those described for Alternative 2. Both food and cover would be abundant, and those species directly and/or indirectly dependent upon vegetation would respond with increased populations. Predatory animals and raptor populations would respond favorably in association with the increased abundance of their prey.

Nongame birds would benefit because of the increased availability of nesting cover and food. The additional grasses and forbs would provide understory cover for ground nesters and abundant food for seed eaters, etc.

Impacts on Big Game.

Mule Deer. Deer populatons would respond favorably to the reduced stocking levels. Forage competition in the spring and winter would be negligible under this alternative. The proposed stocking level would not cause a shortage of spring forage, nor would it reduce the amount of available palatable shrubs utilized by wintering deer.

Livestock grazing would benefit deer by controlling the abundance of grasses and forbs, thus enhancing the ability of the shrubs to compete with the grasses for moisture and nutrients. By maintaining livestock grazing, the resource manager would have a manipulative tool available to improve wildlife habitat.

The proposed fence within the Picabo Allotment could impact the free movement of deer. However, with proper construction and location of the fence, the impact would not be significant.

The predicted population increase would be the same as described for Alternative 2.

Elk. Elk populations would increase significantly because of the increased availability of forage. The reduction of livestock numbers would eliminate the conflict (identified under the proposed action) resulting from increased livestock concentrations. Under this alternative, livestock concentrations would never be greater, and in most cases would be less, than those that presently exist.

The cross fence within the Hash Spring Allotment could impede the movement of elk, but the impact would not be significant.

Antelope. The antelope population response would be similar to that described for Alternative 2. Numbers would increase in conjunction with the improved vegetation conditions. The fence proposed for the Timmerman East Allotment could impact the migrational habits of the antelope herd that winters south of the ES Area. However, if the fence is properly designed and located, the impacts would be minimal.

Impacts on Small Mammals. The increased amount of available vegetation would provide increased food and cover for the many small mammals. The improved habitat conditions would produce an increase in population numbers.

Impacts on Birds.

Sage Grouse. Sage grouse populations could be expected to increase under this alternative. The grasses and forbs would produce additional understory nesting cover as well as increase the quantity and quality of forage.

The limited amount of livestock grazing would produce desirable vegetation results in the meadow areas and adjacent to springs. The light grazing would maintain the succulent forbs but would prevent the vegetation from becoming overgrown and undesirable for grouse.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves. The populations of these species would be expected to increase. The increased availability of grasses and forbs would provide increased nesting cover as well as improved forage. The exception to the expected increase would be the pheasant, which is dependent primarily upon agricultural lands for food and nesting cover.

Waterfowl. Waterfowl populations would be expected to increase because of the increased availability of nesting cover.

Livestock would continue to concentrate near water source areas, but they would not do as much damage because of their lower numbers.

The lower livestock numbers, in conjunction with the proposed grazing systems and seasons of grazing use, would improve the nesting vegetation, thus increasing the productivity of the waterfowl.

Impacts on Threatened, Endangered, and Sensitive Wildlife. The Lower Level Stocking Alternative would not impact the bald eagle, which is the only threatened or endangered species that inhabits the ES Area.

Of the seven sensitive species, only the western burrowing owl would be impacted. The impacts would be the same as identified for the proposed action. Seeding projects could destroy owl nest sites. However, this could be avoided if site-specific inventories were conducted prior to seeding.

Summary. The net impact resulting from Alternative 3, Lower Level Stocking, would benefit practically all wildlife inhabiting the ES Area.

Big game populations would be expected to be slightly higher (5 percent after 15 years) than predicted under the Proposed Action. The increases would result primarily from the increased quantity and quality of food and cover.

Upland game would exhibit an increase in numbers, resulting in a nest increase of approximately 60 percent above existing numbers. Waterfowl would increase approximately 25 percent in nest numbers.

Other wildlife would experience higher population levels; however, the increases cannot be accurately quantified at this time.

Impacts on Fisheries

Lower level stocking would result in impacts similar to those described for the Proposed Action. The riparian vegetation would improve slightly due to the reduced number of livestock, but the change would not be sufficient to improve the condition rating of the streams. The fisheries potential of the streams would not be significantly affected by this alternative.

Impacts on Cultural Resources

Under this alternative impacts caused by range improvements (management facilities) and grazing treatments upon cultural resources would be the same as for the Proposed Action.

Impacts caused by livestock trampling and concomitant sheet erosion would continue but at a lower level than under the proposed action. Intense trampling damage would be expected to continue in areas, such as major water sources, where livestock concentrate. With an initial stocking rate of 50 percent of the Proposed Action, there would be an improvement in vegetation condition and trend; and consequently, erosional impacts would be expected to be reduced.

Some long-term benefits in the form of baseline data acquisition could be expected to accrue, as the mitigating measures identified in Chapter 4 would also be carried out under this alternative, thus increasing the opportunities for cultural resource site discovery.

Impacts on Visual Resources

Visual impacts caused by range improvements and land treatments under this alternative would be the same as those identified for the Proposed Action (see Chapter 3). The impacts caused by livestock grazing would be less detrimental, or more beneficial, than those for the Proposed Action. Improved vegetation conditions would tend to enhance the visual resources.

Impacts on Recreation

Increased game populations would support additional hunting opportunities. Aesthetics of the area would be enhanced, increasing enjoyment of sightseeing, camping, and hiking. If private landowners were antagonized, they might restrict road access across their property.

Impacts on Wilderness

The wilderness inventory and analysis described in Chapter 2 would continue unaffected by this alternative. No wilderness areas would be lost or impaired, because if areas having wilderness characteristics were identified, any conflicting activities would be restricted until Congress acts on designation of the areas.

Impacts on Livestock Grazing

This alternative would require a downward adjustment from 58,731 AUMs annual grazing use (1972-1976 average) to 19,147 AUMs, a 67 percent reduction. Forage available for livestock would decrease by 39,584 AUMs. Four allotments; Gwin Ranch, Poison Creek, Spring Creek, and Timmerman West, comprising 3 percent of the ES Area, would not require a reduction in livestock grazing. These are the allotments in which the stocking rate could be increased by greater than 100 percent from the 1972-1976 licensed use under the Proposed Action (Table 3-15). The livestock operators using these allotments also graze in other allotments within the ES Area. No livestock operator would be able to maintain the existing level of grazing. This would adversely affect livestock grazing, both in the short and long terms. The socioeconomic implications of this alternative are discussed in "Impacts on Socioeconomic Conditions."

The 112 livestock operations using public lands in the ES Area vary widely. Because the public lands are grazed during the spring and fall by sheep and cattle, they provide a necessary link between the winter livestock operation on the base property and summer grazing on higher-elevation private land, public land, and/or National Forest land. Thirty-eight livestock operators would have to alter their established mode of operation during the spring and fall grazing periods because they could only move a small part of their livestock through the ES Area. Some would not have the necessary flexibility to keep most of their livestock on the home ranch or rented pasture during the spring season. An additional expense would be trailing or trucking the remaining livestock through the ES Area to get them to the summer ranges.

Seventy-four livestock operators graze cattle in the ES Area during the spring, summer and fall. Unless these existing livestock operations could be altered to fit largely on the home ranch and/or other private pastureland, the season-long, cow-calf operators would have no choice but to reduce herd size and/or change the entire farm or ranch plan. Many would not have the flexibility to absorb the necessary change.

Because there is wide variation in the dependence upon public land forage, there would be a correspondingly wide variation in the degree of impact. Some individuals who could not adjust to the change would probably choose to sell or lease their ranches. Other operators would probably cut back the size of their breeding stock until a modified yearlong operation could be developed. Individual livestock operations presently having a high percentage of public land forage, and those operations involving larger numbers of livestock would experience the greatest impacts.

Increased forage production would be expected over the next 15 years if this alternative is implemented (see "Impacts on Vegetation"). The increase, estimated to be 14,639 AUMs (expected total future production, 68,539 AUMs, minus total present production, 53,900 AUMs) could be allocated to livestock at the end of fifteen years providing present big game numbers remain at or near present levels.

Even assuming no future production would be needed to satisfy increased big game forage demand, the 14,639 AUMs gained over the long term under this alternative would not compensate for the immediate short-term reduction of 39,584 AUMs resulting from the proposal (Table 8-12). The long-term impact would, therefore, be a net deficit of at least 24,945 AUMs on the proposed allotments.

The reduced stocking rates would generally allow more forage for each grazing animal. Moreover, as vegetation condition improved, livestock would have a greater proportion of highly palatable and desirable forage species. Improved plant vigor would produce more abundant and accessible forage, and the quality of forage would improve. Improved forage quality would be expected to improve daily weight gains in calves and lambs, improve the general health of breeding animals for higher conception and birth rates, and improve general animal vigor, thus improving overall performance and reducing death losses incurred from a wide variety of causes.

If lower level stocking is implemented, noxious weeds and poisonous plants would be expected to decrease in abundance over the long term. Improvement in fleece quality in sheep from fewer sticky weed seeds such as cockleburr would be a benefit. Death losses from poisonous plants could decrease over the long term because most poisonings occur on areas depleted of palatable nutritious forage. Such areas would decrease over time.

Some of the same impacts would occur as a result of implementing grazing systems under this alternative as under the Proposed Action. They include the increased movement of grazing animals, which would require more time and effort from the livestock operators; combining allotments, which could lead to personal conflicts from sorting and handling livestock; and later turnout dates, which would require livestock to be held in feedlots later in the spring.

Other impacts from grazing systems under the Proposed Action would not likely occur under this alternative. Livestock numbers would be so reduced that concentration in use pastures and around low volume springs and favored pipeline troughs would not be a problem. Close monitoring of available water supplies during hot weather would not be necessary.

The effects of range improvements on livestock grazing would be the same as the Proposed Action.

This alternative calls for 70 tracts of public land totaling 9,518 acres to be unallotted for livestock grazing (Table 1-3). On the adverse side, 52 tracts totaling 8,596 acres would be set aside for other uses such as wildlife, recreation, or cultural resource protection. This would result in an immediate and long-term loss of 848 AUMs. On the beneficial side, four tracts totaling 297 acres would be used for stock trails, stock driveways, and livestock holding fields. Fourteen tracts totaling 625 acres would be incorporated into proposed allotments sometime within the fifteen-year life of the proposal. Inclusion of the tracts would make an additional 88 AUMs available for livestock grazing.

In summary, forage quality and availability on a per unit basis would improve. Livestock operators would have to make basic changes in their mode of operation, and many lack the flexibility to do so. The reduced stocking rate on 97 percent of the area would be an adverse long-term impact because 39,584 AUMs grazing use would be lost from proposed allotments, and 848 AUMs would be lost from proposed unallotted areas. Because only 14,727 AUMs would be expected from increased production on the proposed allotments (14,639 AUMs) and addition of fourteen unallotted areas to the allotments (88 AUMs), a net long-term deficit of 24,857 AUMs would remain after fifteen years.

This long-term adverse impact would affect 112 of the 1,072 ranches (10 percent) reporting during the 1974 Census of Agriculture (see Table 2-35). Because the five year (1972-1976) average use of 58,731 AUMs (Table 1-5) represents only about 2.2 percent of the livestock forage requirement of the five-county area (Chapter 2, "Livestock Grazing"), the proposed reduction would not have serious impacts on the total livestock industry. If public land AUMs were decreased by 39,584, it would represent 1.5 percent of the total AUM requirement for the livestock industry in the five-county area.

Impacts on Socioeconomic Conditions

Population. Population trends and levels would not differ significantly from those identified in Chapter 2, "Socioeconomic Conditions," as a result of implementing this alternative.

Employment. The livestock industry would realize a direct loss of 21 jobs as a result of implementing this alternative. An additional seven jobs would be lost to the five-county economy as a secondary impact of this alternative. The seven jobs lost would be spread through six different sectors of the economy. These impacts are displayed in Table 8-15.

Income. Under this alternative the initial stocking rate would be reduced to 19,147 AUMs. This would represent a loss of 63,973 AUMs from active qualified demand and a loss of 39,584 AUMs from 1972-1976 average licensed use. Individual losses from active qualified demand would range from 0 to 6,466 AUMs. Individual adjustments from average use would range from a loss of 4,160 AUMs to a gain of 390 AUMs. Table 8-16 shows each operator in the ES Area and their active qualifications and average actual use. It also shows what each operator's loss of AUMs and percentage changes would be from both active and average use under this alternative. To compensate for reductions in grazing on public land, livestock operators would have to reduce herd sizes, buy or raise additional hay, convert irrigated pastureland, and/or buy or rent additional irrigated or dryland pasture.

The impact of this loss of AUMs would be a reduction in livestock and livestock-related income in the five-county economic study area. The initial reduction in income would be $313,109.

The rancher with the largest loss from average use (4,160 AUMs) would lose $32,906 in income. The largest gain (390 AUMs) in income would be $3,085. The average loss (367 AUMs) would be $2,903 of income.

These reductions in income would create secondary impacts throughout the study area. An additional loss of income of $77,610 would occur as a result of the initial loss of $313,109 in the livestock industry. Income lost by industry is shown in Table 8-17. These would be annual losses of income. The total loss of income,

TABLE 8-15

SECONDARY EMPLOYMENT LOSSES
ALTERNATIVE NO. 3: LOWER LEVEL STOCKING

INDUSTRY	NUMBER OF JOBS
AGRICULTURE	
Livestock (Except Dairy-Poultry)	1
Other	0
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	1
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	2
TRANSPORTATION AND COMMUNICATION	1
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	1
FINANCE, INSURANCE, REAL ESTATE	0
SERVICES	1
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	7

Source: Bureau of Land Management, Idaho State Office,
Dynamic Regional Analysis Model (DYRAM),
November 1978

TABLE 8-16

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA UNDER ALTERNATIVE 3

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVESTOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS				DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
				FROM ACTIVE GRAZING QUALIFICATIONS		FROM FIVE YEAR AVERAGE LICENSED USE		
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Adams, Charlie	122	124	25	-97	-80	-99	-80	6
Alexander, Eugene	105	105	11	-94	-90	-94	-90	17
Allen, Bud	237	290	44	-193	-81	-246	-85	16
Allen, Richard & Sharon	51	31	9	-42	-82	-22	-71	9
Arkoosh & Zidan	3629	2052	856	-2773	-76	-1196	-58	15
Armstrong, Forest	464	385	51	-413	-89	-334	-87	32
Astorquia, Josephine	1606	839	411	-1195	-74	-428	-51	21
Baldwin, Clyde	61	36	8	-53	-87	-28	-78	10
Baldwin, J.D.	150	135	22	-128	-85	-113	-84	12
Baldwin, L.W.	417	374	77	-340	-82	-297	-79	14
Bancroft, Paul	514	476	86	-428	-83	-390	-82	42
Bauscher Ranch	807	603	145	-662	-82	-458	-76	15
Bellamy, Don	482	237	104	-378	-78	-133	-56	50
Bilboa, Alex	594	514	111	-483	-81	-403	-78	39
Braun, Gordon	83	83	30	-53	-64	-53	-64	3
Bray, Sterling & Ada	1031	507	174	-857	-83	-333	-66	34
Breckenridge, L.L.	2960	373	763	-2197	-74	+390	+105	12
Broadie, Lester	261	215	69	-192	-74	-146	-68	14
Brown, Evan J.	326	380	194	-132	-40	-186	-49	38
Brown, John, Inc.	1005	347	265	-740	-74	-82	-24	25
Browning, Charlie	90	27	23	-67	-74	-4	-15	4
Burman Grazing Assn.	815	814	89	-726	-89	-725	-89	14
Butler, Dale T.	483	362	104	-379	-78	-258	-71	23
Byce, James W.	183	208	34	-149	-81	-174	-84	3
Byrum, Gary	272	238	59	-213	-78	-179	-75	14
Calarco Cattle	2912	2459	433	-2479	-85	-2026	-82	24
Campbell L & L	1720	745	360	-1360	-79	-385	-52	10
Castle, James C.	88	82	30	-58	-66	-52	-63	13
Chambers, Ferrel	4	1	1	-3	-75	0	0	0
Circle Hanging H	83	71	33	-50	-60	-38	-54	7
Clark, Wayne	876	759	266	-610	-70	-493	-65	18
Coiner & Sons	23	1	6	-17	-74	+5	+500	0
Connell, Sanford	182	182	20	-162	-89	-162	-89	8
Connell, William	47	46	5	-42	-89	-41	-89	5
Croft Construction Co.	228	141	34	-194	-85	-107	-76	13
Depew, George	30	30	3	-27	-90	-27	-90	1
Double D. Ranch	293	335	174	-119	-41	-161	-48	12
Drum, E.E.	496	320	101	-395	-80	-219	-68	39
Faught, Waldo	39	30	4	-35	-90	-26	-87	7
Faulkner L & L	8329	6023	1863	-6466	-78	-4160	-69	28
Flying Triangle	1302	615	416	-886	-68	-199	-32	12
Fredrickson, J.E.	240	195	73	-167	-70	-122	-63	18
Freeman, J.E.	345	345	38	-307	-89	-307	-89	16
Gardiner, C.W. & Sons	255	254	51	-204	-80	-203	-80	3
Guthrie, Evan	275	209	57	-218	-79	-152	-73	8
Haga, Marguerite	1004	611	193	-811	-81	-418	-68	42
Hansen, C.M.	26	73	26	0	0	-47	-64	2
Hansen, Mark	1164	999	201	-963	-83	-798	-80	9
Hess, Leroy	100	98	17	-83	-83	-81	-83	33
Iest, C. Estate	1026	1026	229	-797	-78	-797	-78	8
Johnson, Wendell	694	782	413	-281	-40	-369	-47	12
Jones, Waldo	356	316	73	-283	-79	-243	-77	3
Jones & Sandy	3506	1292	884	-2622	-75	-408	-32	35
Karstetter, G.W.	138	138	23	-115	-83	-115	-83	3
Kast C K Cattle Co.	3342	3635	579	-2763	-83	-3056	-84	14
Kast, Mike	173	173	26	-147	-85	-147	-85	16
Kerner, Gilbert	241	230	49	-192	-80	-181	-79	38
Kerner, Oscar	338	316	69	-269	-80	-247	-78	26
Kevan, James	23	23	20	-3	-13	-3	-13	0
Kinney, Victor	413	382	114	-299	-72	-268	-70	13
Krahn, Ben	572	305	103	-469	-82	-202	-66	19

TABLE 8-16 Continued

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY
FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA
UNDER ALTERNATIVE 3

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS				DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
				FROM ACTIVE GRAZING QUALIFICATIONS		FROM FIVE YEAR AVERAGE LICENSED USE		
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Leavell Cattle Co.	2026	1036	358	-1668	-82	-678	-65	3
Leeper, E.L.	25	25	7	-18	-72	-18	-72	5
Lockwood L & L	373	346	76	-297	-80	-270	-78	18
Luther, Charles	305	225	66	-239	-78	-159	-71	4
M & S Company	116	133	35	-81	-70	-98	-74	1
Meyers, Samuel	15	17	4	-11	-73	-13	-76	1
Miller, Ilene	105	105	20	-85	-81	-85	-81	26
Mink, Inc.	472	422	102	-370	-78	-320	-76	11
Mitchell, Earl	33	33	6	-27	-82	-27	-82	19
Molyneux, A.W.	298	335	177	-121	-41	-158	-47	16
Moody, G. & Sons	869	672	123	-746	-86	-549	-82	41
Nielson, Morris	42	40	9	-33	-79	-31	-78	6
Norman, Karl O.	68	68	24	-44	-65	-44	-65	10
North Fork Ranch	132	1	35	-97	-73	+34	+3400	5
Oneida Farms, Inc.	312	131	109	-203	-65	-22	-17	6
Osborne, Dwight	1697	888	253	-1444	-85	-635	-72	57
Parke, John	476	247	87	-389	-82	-160	-65	38
Patterson, Manning	1649	1097	540	-1109	-67	-557	-51	21
Pauls, Gayland	464	372	100	-364	-78	-272	-73	10
Pendleton, Charles	1200	788	235	-965	-80	-553	-70	43
Phelps, F.F.	2779	2368	394	-2385	-86	-1974	-83	39
Picabo Livestock	1268	899	175	-1093	-86	-724	-81	5
Pugmire, Marion	426	334	72	-354	-83	-262	-78	23
Quarter Circle Lazy H	549	581	104	-445	-81	-477	-82	13
Reeder, Glen	90	89	29	-61	-68	-60	-67	11
Reedy, Carrie L.	643	466	91	-552	-86	-375	-80	25
Renner, Lawrence	340	213	48	-292	-86	-165	-77	19
Richtron, Inc.	348	402	207	-141	-41	-195	-49	14
Ritter, James B.	212	121	23	-189	-89	-98	-81	9
Riley, Carl	314	314	34	-280	-89	-280	-89	16
Ruiz, Bernardo	160	1	17	-143	-89	+16	+1600	5
Salmon Falls Sheep Co.	392	263	90	-302	-77	-173	-66	4
Sandy Brothers	612	435	125	-487	-80	-310	-71	22
Sandy, Donald	64	62	13	-51	-80	-49	-79	35
[illegible], Evert	639	599	131	-508	-80	-468	-78	34
Scheer, Jack	238	72	38	-200	-84	-34	-47	11
Schmidt Brothers	570	360	85	-485	-85	-275	-76	6
Schoessler, Carl	54	54	7	-47	-87	-47	-87	3
Sliman & Guthrie	676	337	138	-538	-80	-199	-59	15
Sliman Sheep Co.	3751	2468	885	-2866	-76	-1583	-64	26
Sorenson, Gordon	129	131	38	-91	-71	-93	-71	2
Spring Cove Ranch	705	784	94	-611	-87	-690	-88	21
Struthers, Robert J.	253	263	84	-169	-67	-179	-68	* 2/
Stevenson, John	196	185	79	-117	-60	-106	-57	16
Stutzman, Clifford	458	416	94	-364	-79	-322	-77	32
Tews, Lawrence	5	3	1	-4	-80	-2	-67	1
Thomas, Charles	433	279	89	-344	-79	-190	-68	33
Tschannen, Josephine	284	213	48	-236	-83	-165	-77	22
Varin, John	576	502	90	-486	-84	-412	-82	12
Varin, William	510	464	104	-406	-80	-360	-78	28
Vaughn Brothers	123	1	13	-110	-89	+12	+1200	29
Yore Cattle Co.	5253	3740	1779	-3474	-66	-1961	-52	29

1/ AUMs and dependency based on the present situation as of January 1978. All numbers have been rounded.

2/ Less than one percent

Source: Bureau of Land Management, Idaho State Office

TABLE 8-17

SECONDARY INCOME LOSSES BY INDUSTRY
ALTERNATIVE NO. 3: LOWER LEVEL STOCKING

INDUSTRY	AMOUNT
AGRICULTURE	
Livestock	$11,310
Other	8,770
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	11,770
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	11,770
TRANSPORTATION AND COMMUNICATION	11,540
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	11,540
FINANCE, INSURANCE, REAL ESTATE	4,580
SERVICES	6,330
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	$77,610

Source: Bureau of Land Management, Idaho State Office, Dynamic Regional Analysis Model (DYRAM), November 1978

both primary ($313,000 to the livestock industry) and secondary ($77,610 through the entire economy), would total $390,610 annually for the study area. This compares with a total 1974 five-county income of $172,213,000 (Chapter 2, "Socioeconomic Conditions"). Thus, as a result of implementing this alternative, the total loss of income in the study area would be approximately 0.2 percent of the total income generated. Total income losses in the livestock industry ($313,000 primary plus $11,000 secondary) would be $324,000 annually. This compares to the total 1974 five-county farm income of $34,856,000 (see Chapter 2, "Socioeconomic Conditions"). Thus, the livestock industry losses from this alternative would be approximately 0.9 percent of the farm income in the study area.

In the long term, 14,727 AUMs could be restored to grazing use, making a total of 33,874 AUMs available for livestock. This would be 49,246 AUMs below the current active qualifications, and 24,857 AUMs below the 1972-1976 average actual use. Since operators could be licensed for more AUMs in the long term than immediately after implementation of the Proposed Action, income for the livestock operators would be partially restored. This potential increase would be $116,500 annually (14,727 AUMs x $7.91 income/AUM). Other industries in the area would also benefit from this long-term gain by the livestock industry. As a result, the total annual income increase could be as much as $145,500 throughout the economy, including livestock (DYRAM Model, BLM 1978). The net result after fifteen years would be a $245,100 reduction ($390,600 less $145,500) in annual income throughout the economy of the five-county area. This would represent a 0.1 percent net change in long-term income.

Social Values and Attitudes. The social impacts resulting from this alternative would be the same in kind as for the Proposed Action. Any variation would be in degree of intensity, and this cannot be quanitifed.

ALTERNATIVE 4:

MAXIMUM REHABILITATION

Description of Alternative 4

General

Under this alternative BLM would conduct relatively extensive land treatments (prescribed burning, spraying, plowing, and seeding) on deteriorated areas to achieve management objectives, including increased forage production, in less than the fifteen years projected for the Proposed Action. The allotment and unallotted area boundaries would be the same as under the Proposed Action except for one difference: the proposed Picabo Allotment would be expanded to include the 3,648 acres contained in the proposed Deerhorn, Leduck Canyon, and Winter Deer unallotted areas (see Map 1-1). The initial stocking rates, seasons of use, and grazing systems under this alternative would be the same as under the Proposed Action for all allotments except the eighteen listed in Table 8-18.

Forage Allocation

This alternative would be based on the same method of forage allocation as the Proposed Action (see Appendix 1, "Forage Allocation"). The level of forage utilization would not exceed 60 percent of the palatable forage in any use pasture. During at least the first two years of vegetation establishment following land treatments, the treated areas would be protected, and the grazing systems or initial stocking rates would be adjusted to ensure that utilization would still be maintained at less than 60 percent. As shown on Table 8-18, nine allotments would have greater initial stocking rates under this alternative than under the Proposed Action, and two allotments would have lower stocking. Forage allocated to big game would be the same as under the Proposed Action except in the Picabo Allotment, where 322 AUMs would be allocated from public land under this alternative that were attributed to private land under the Proposed Action. Additional forage produced in the future under this alternative would be allocated consistent with the long-term objectives established by the applicable resource management plans.

Grazing Systems

Fourteen allotments, or portions of them, would have grazing systems under this alternative that would be different from those under the Proposed Action (see Table 8-18). Also, fourteen allot-

TABLE 8 - 18

COMPARATIVE ANALYSIS BETWEEN PROPOSED ACTION AND ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME 1/	INITIAL STOCKING RATE		SEASON OF USE		GRAZING SYSTEM 2/	
	(PROPOSED ACTION)	(ALTERNATIVE 4)	(PROPOSED ACTION)	(ALTERNATIVE 4)	(PROPOSED ACTION)	(ALTERNATIVE 4)
BLACK BUTTES	4	4	6/1 - 6/30	6/1 - 7/30	ASG	DR-2
BLACK CANYON	2,283	2,816	5/30- 9/15 4/16- 5/30 7/25- 9/15	4/16- 5/28 5/29- 8/27	MRR-3 & MRR-3	MRR-3 & MDR-3
CANAL	47	47	5/1 - 9/30	5/1 - 7/30	RR-3 & DR-2	DR-2
CLOVER CREEK	2,031	2,048	4/1 - 5/30 11/10-12/31 5/1 - 6/30 10/16-11/23	4/1 - 5/26 11/3 -12/31 5/27- 6/28 10/16-12/31	RR-4 & DR-2	DR-4 & DR-2
COMPOUND	60	60	5/15- 9/15	5/15- 9/15	RR-3	DR-2
DEMPSEY	1,116	1,274	5/1 - 6/30 10/1 -12/15	5/1 - 6/15 10/15-12/15	RR-3	MRR-3
FRICKE	7	7	4/16- 6/15	4/16- 8/14	ASG	RR-3
INDIAN	2,389	2,663	4/1 - 6/30 10/16-11/30	4/1 - 6/30 10/16-12/15	MDR-5	MDR-5
KING HILL	1,129	1,132	5/1 - 6/30 7/31-11/30	4/16- 6/30 5/1 - 5/25 7/31-11/30	RR-3 & DUS	DR-3 & AGS DUS
KINZIE BUTTE	720	901	4/16- 8/31 10/16-12/15	4/16-12/15	RR-4	DR-4
LAVA	675	1,000	5/1 - 9/30	5/1 - 9/30	RR-3	RR-3
MACON FLAT	2,506	3,367	5/1 - 6/15 10/15-11/30	5/1 - 6/15 10/15-11/30	RR-3	DR-3
PICABO 3/	420	117	5/1 - 8/31	5/1 - 6/30	RR-3	DR-2
RATTLESNAKE	749	624	5/5 - 8/16	7/28- 8/9 5/5 - 7/27	RR-5	RR-2 & DR-3
TICESKA	319	310	5/1 - 8/31	4/1 - 6/30	RR-3	RR-3
TRACK	176	266	5/1 - 8/15	5/1 - 8/15	RR-3	DR-3
"46"	14	14	5/1 - 6/30	5/1 - 6/30 7/1 - 8/30	ASG	DR-2
"101"	305	305	11/1 - 2/28	11/1 - 3/31	DUD	DUD

1/ Only those allotments with differences between the Proposed Action and Alternative 4 are listed on this table.

2/ For explanation of grazing system abbreviations, see Table 1-2 and "Grazing Systems" section in Chapter 1.

3/ The initial stocking rate is lower in Alternative 4 than in the Proposed Action because of a change in the methodology used for allocating wildlife AUMs. The Proposed Action allocates wildlife AUMs on private and public lands whereas Alternative 4 allocates the entire wildlife requirement from public lands only. Although the data show an increase in allotment acreage for Alternative 4, the net result is a 303 AUM decrease in available AUMs for livestock.

ments would have different seasons of use, although several of the changes would be insignificant. The grazing systems would generally be implemented as soon as the necessary water developments and management facilities were completed. However, some grazing systems would be temporarily modified during the establishment of vegetation following land treatments. All treated areas would be rested from grazing for the subsequent two growing seasons, or longer, depending on growing conditions. Therefore, a few grazing systems would not be fully implemented until two years after the completion of the last land treatments.

Range Improvements

Table 8-19 shows the type, amount, and total cost, by allotment, of the range improvements that would be necessary under this alternative. These improvements would include the same water developments, management facilities, and land treatments as under the Proposed Aaction. However, this alternative would also include substantial additional acreage of land treatments. As shown in Table 8-19, the Maximum Rehabilitation Alternative would entail 33,130 acres of plowing, 36,435 acres of prescribed burning, 12,707 acres of herbicide spraying (2,4-D), and 42,650 acres of seeding.

Map 8-1 shows the general locations of the range improvements under this alternative. The specific areas to be treated would only be a percentage (as indicated on the map) of the large areas outlined. Also, it should be noted that some treatments (such as plowing and seeding) would overlap. Therefore, the total acreage disturbed would be less than the sum of the treatment acreages given above. The design and intensity of all the land treatments would be consistent with the applicable Management Framework Plans and would be subject to the constraints listed for the Proposed Action (see Chapter 1, "Range Improvement Constraints"). In some instances, additional fencing might be temporarily needed (during establishment of vegetation) to protect land treatment areas from livestock grazing.

The range improvements under this alternative would be implemented according to the five-year schedule shown in Table 8-20. It is assumed that sufficient funding and manpower would be made available to the Shoshone District to complete the work in a timely manner.

Other Management

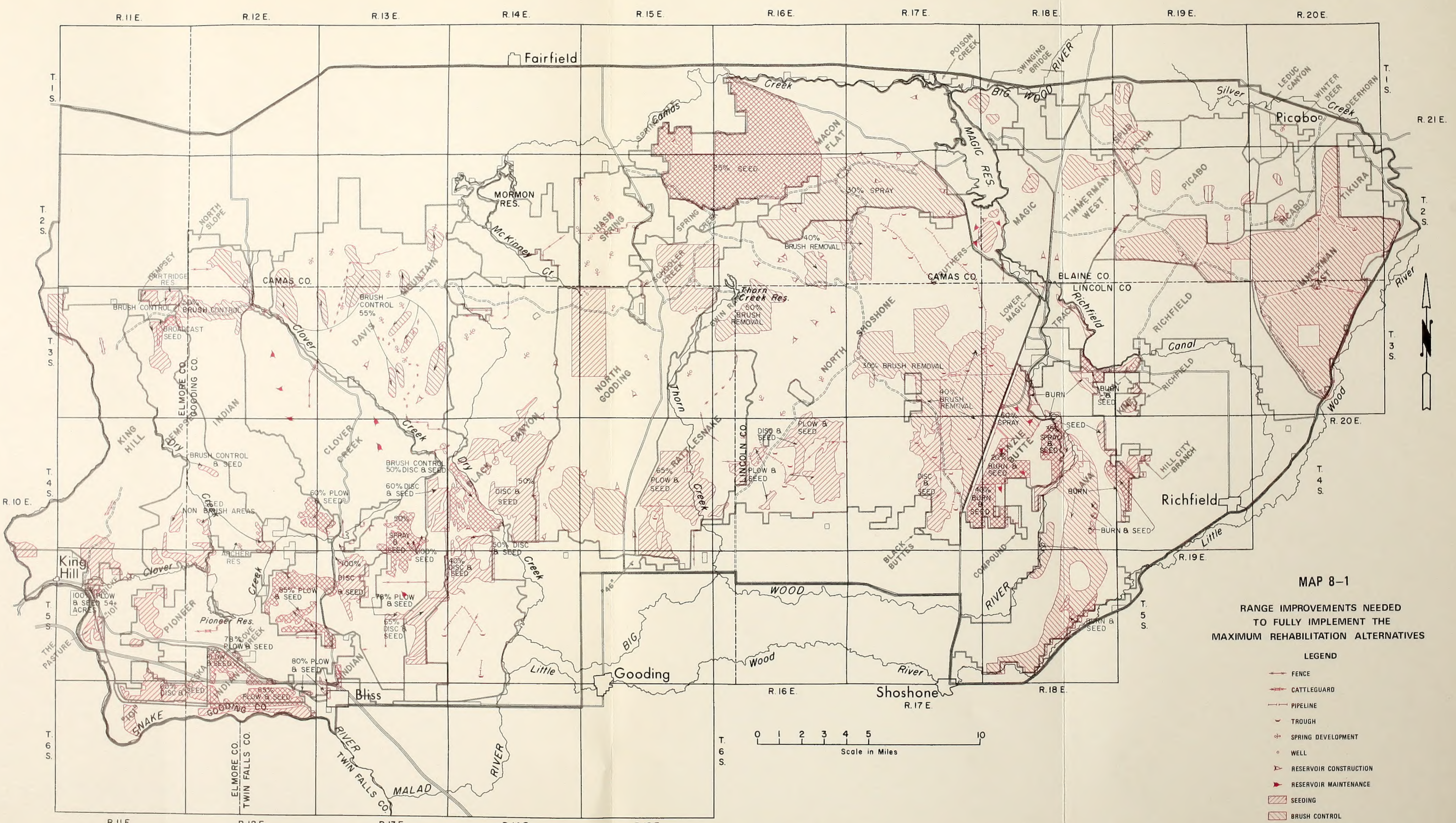
Under this alternative the ES Area would continue to be managed for wildlife, watershed, recreation, and other resources, in addition to livestock grazing. Trespass, easements, and crossing permits would be handled under existing laws and regulations.

TABLE 8-19

TYPE, AMOUNT, AND TOTAL COST OF RANGE
IMPROVEMENTS BY ALLOTMENT
ALTERNATIVE NO. 4: MAXIMUM REHABILITATION

ALLOTMENT NAME	SPRINGS RESERVOIRS (each)	PIPELINES (miles)	FENCES (miles)	CATTLEGUARDS (each)	STOCK TRAIL (miles)	BRUSH CONTROL			SEEDING (acres)	TOTAL COST (Dollars)
						RANGELAND PLOW	PRESCRIBED BURN	HERBICIDE SPRAY		
Black Buttes						44			44	836
Black Canyon	7	3.8	12.1			4,255			4,255	151,680
Canal							250		262	2,735
Clover Creek	6		11.0	3		1,985		452	2,500	88,661
Compound			0.5							900
Cove Creek						42			42	794
Davis Mountain	15		10.0					2,500	1,750	127,342
Dempsey	2		1.4			1,000	1,125	350	2,060	47,702
Fricke						54			54	1,004
Gwin Ranch 1/			0.3							450
Hash Spring	12		4.0				40			37,300
Hill City Branch			0.8	1			280		40	4,900
Indian			18.0	2		4,615		1,350	4,615	129,180
Kime		0.3					280			2,635
King Hill	3 2/		4.0			325	400		925	24,500
Kinzie Butte	6		16.0	3		1,275		2,055	2,257	90,466
Lava		1.0	5.0		5.0		6,000		3,000	46,350
Lower Magic 1/			0.8							1,300
Macon Flat	18					4,000		3,000	4,000	186,900
Magic	1		1.5					300		10,160
North Gooding	30				15.0	2,000	2,300	2,200	2,000	165,500
North Shoshone	19	24.4	46.8	8		6,200	8,800		6,200	374,775
North Slope 1/										000
Picabo	1					140 3/	390		480	12,038
Pioneer			1.7	1		1,090			1,090	28,210
Poison Creek 1/										000
Rattlesnake	2	1.0	11.0			4,000			4,000	107,525
Richfield Cattle 1/										000
Schooler Creek			2.0							2,800
Spud Patch	3		1.5				850			16,675
Spring Creek 1/										000
Springdale 1/			1.0							1,800
Struthers	4		0.5				600		500	16,520
Swinging Bridge	1						270			3,850
The Pasture			0.3						360	2,856
Ticeska			2.0			1,015			1,015	23,494
Tikura 1/										000
Timmerman East	2	8.0 4/	24.0	4			13,750			176,560
Timmerman West	3						1,100			23,050
Track								500		4,250
"46"									111	788
"101"						1,090			1,090	20,710
TOTAL	135	38.5 3/	176.2	22	20.0	33,130	36,435	12,707	42,650	1,937,196

1/ There is no Maximum Rehabilitation Alternative for these allotments. If improvements are shown, they are from the Proposed Action, and represent the minimum improvements necessary to implement a grazing system. If no improvements are shown, the existing improvements are sufficient for the proposed grazing system.
2/ Includes two gabions, which are rock structures held together by net wire. Gabions slow water runoff and reduce erosion.
3/ This brush control project would be done with the Ely chain, a long ship anchor chain with short pieces of railroad track welded to the chain links.
4/ Includes the Timmerman East Well.



MAP 8–1

RANGE IMPROVEMENTS NEEDED TO FULLY IMPLEMENT THE MAXIMUM REHABILITATION ALTERNATIVES

TABLE 8-20

IMPLEMENTATION SCHEDULE AND COSTS FOR RANGE IMPROVEMENTS
ALTERNATIVE NO. 4: MAXIMUM REHABILITATION

YEAR	SPRINGS RESERVOIRS	PIPELINES	FENCES	CATTLEGUARDS	STOCK TRAIL	BRUSH CONTROL			CHEATGRASS CONTROL	SEEDING	TOTAL COST
						RANGELAND PLOW	PRESCRIBED BURN	HERBICIDE SPRAY			
	EACH	MILES	MILES	EACH	MILES	ACRES	ACRES	ACRES	ACRES	ACRES	DOLLARS
1980	35	9.0	74.8	12	20	2,055	2,975	585		3,605	406,359
1981	21	21.5	63.0	9		1,955	3,902	2,850	860	2,385	347,129
1982	47	8.0 1/	20.6			10,461	8,747	6,615		14,571	572,032
1983	10		3.5			6,812	10,503	1,280	1,000	7,234	236,570
1984	22		14.3	1		11,847	10,308	1,377		15,205	375,106
TOTALS	135	38.5	176.2	22	20	33,130	36,435	12,707	1,860	43,000	1,937,196

1/ Includes installation of the Timmerman East well.

Analysis of Alternative 4

The cause agents for this alternative are the same as for the Proposed Action. They are: (1) adjustment of stocking rate (forage allocation), (2) implementation of grazing systems, (3) completion of range improvements (including land treatments), and (4) protection of certain areas from livestock grazing. The generalized adverse and beneficial short- and long-term impacts of all these cause agents were analyzed in Chapter 3 and are not repeated in this section.

The significant differences between this alternative and the Proposed Action are the level of initial livestock stocking rate and the level of land treatments. Therefore, the impacts of these two cause agents will be emphasized in this section. The acreages of disturbance expected to result from implementing range improvements under this alternative would relate to impacts on several different resources and, therefore, are summarized in Table 8-21.

Impacts on Soils

Implementation of this alternative would generally have an overall beneficial impact on soils by improving cover, increasing soil productivity, and reducing erosion. Cover would increase by an estimated 7 percent, and erosion rates would decrease 7 percent from a present rate of 1.00 ac ft/sq mi/yr to 0.93 ac ft/sq mi/yr. This compares with a 5 percent change anticipated under the Proposed Action.

Under this alternative low erosion rates would be expected on three allotments (32,448 acres), moderate erosion rates would be expected on nineteen allotments (155,400 acres), and high erosion rates would be expected on 20 allotments (376,782 acres). Under the Proposed Action it is anticipated that the same three allotments would have low erosion rates, but 20 allotments (165,007 acres) would have moderate erosion rates, and 19 allotments (367,175 acres) would have high erosion rates. A summary of erosion rates and predicted changes in erosion rates is given in Appendix Table A2-1.

Range improvements under the Maximum Rehabilitation Alternative would have an overall long-term beneficial impact on soils by improving cattle distribution and vegetative cover. However, increases in erosion would be expected in the short term on 87,653 acres as compared to 6,109 acres under the Proposed Action.

In the short term, water developments and management facilities under this alternative would increase erosion rates about 150 percent on 375 acres, compared to a 200 percent increase on 257 acres under the Proposed Action. In the long term, 430 acres would be disturbed as a result of permanent improvements and "sacrifice areas" depleted of vegetation by livestock concentration (see Table 8-21). This compares with 220 acres of long-term disturbance under the Proposed Action. About 384 acres, compared

TABLE 8 - 21

EXPECTED SHORT-TERM AND LONG-TERM
DISTURBANCE FROM ALTERNATIVE 4
RANGE IMPROVEMENTS

PROPOSED RANGE IMPROVEMENTS	TOTAL UNITS	UNIT DESCRIPTION	SHORT TERM DISTURBANCE		LONG TERM DISTURBANCE	
			PER UNIT (Acres)	TOTAL (Acres)	PER UNIT (Acres)	TOTAL (Acres)
WATER DEVELOPMENTS						
Water Wells	1.0	each	0.10	0.1	0.10	0.10
Storage Tanks	1.0	each	0.10	0.1	0.04	0.04
Pipelines	38.5	miles	1.50	57.8	2.10 1/	80.85 1/
Spring Development	78.0	each	0.01	0.8	2.10 1/	163.80 1/
Spring Maintenance	5.0	each	0.01	-	-	-
Reservoir Construction	57.0	each	1.15	65.6	2.10 1/	119.70 1/
Reservoir Maintenance	11.0	each	0.69	7.6	-	-
Subtotal Water Dev.	-	-	-	132.0	-	364.49
MANAGEMENT FACILITIES						
Fencing	176.2	miles	1.21	213.2	0.20	35.24
Cattleguards	22.0	each	0.01	.2	0.01	.20
Stock Trails	20.0	miles	1.50	30.0	1.50	30.00
Subtotal Mgmt. Fac.	-	-	-	243.4	-	65.44
LAND TREATMENTS						
Prescribed Burning (Without Seeding)	33,355	acres	1.00	33,355	-	-
Herbicide Spraying (Without Seeding)	11,273	acres	1.00	11,273	-	-
Plowing + Seeding	32,990	acres	1.00	32,990	-	-
Chaining + Seeding	140	acres	1.00	140	-	-
Burning + Seeding	3,080	acres	1.00	3,080	-	-
Spraying + Seeding	1,434	acres	1.00	1,434	-	-
Seeding Only	5,006	acres	1.00	5,006	-	-
Subtotal Land Treatments	-	-	-	87,278	-	-
TOTAL: ALL TYPES OF IMPROVEMENTS	-	-	-	87,653	-	430

1/ Includes two acre "sacrifice area" depleted of vegetation by livestock concentration.

to 178 acres under the Proposed Action, would have six-fold increases in erosion rates in the long term because of trampling, compaction, and/or lack of cover.

Proposed land treatments on 87,278 acres would increase erosion rates in the short term by 100-500 percent, depending on the kind of treatment and the soils. This compares with a 60-300 percent increase in erosion rates on 5,852 acres under the Proposed Action. These short-term adverse impacts would decrease as revegetation proceeded. On 33,355 acres of prescribed burning, erosion rates would increase by 175 percent. The Proposed Action would produce a 150 percent increase on 2,540 acres of prescribed burning. The proposed herbicide spraying would increase erosion rates about 100 percent on 11,213 acres. This compares with a 70 percent increase in erosion rates on 1,200 acres proposed for spraying under the Proposed Action. Plowing and seeding 32,990 acres would increase erosion rates about 500 percent, while chaining and seeding on 140 acres would increase erosion rates 450 percent. These treatments would not occur under the Proposed Action. Burning and seeding would result in a 300 percent increase in erosion rates on 3,080 acres, as compared with 1,500 acres under the Proposed Action. On 1,434 acres of spraying and seeding erosion rates would increase by 200 percent. This treatment is not included in the Proposed Action. Erosion would increase by 150 percent on 5,006 acres proposed for seeding only, as compared with 612 acres under the Proposed Action. Long-term impacts from all land treatments would be negligible or slightly beneficial.

The short-term and long-term impacts that would take place on the proposed unallotted areas would be the same as under the Proposed Action (see Chapter 3, "Impacts on Soils"). However, instead of 8,596 acres (under the Proposed Action), 4,948 acres would be protected from livestock grazing under the Maximum Rehabilitation Alternative. The erosion rates on the 3,648 acres to be included in the Picabo Allotment would not be significantly different from those under the Proposed Action.

Impacts on Water Resources

The Maximum Rehabilitation Alternative would call for the removal or alteration of existing sagebrush and cheatgrass stands. Impacts on water resources resulting from the alternative would be most significant during the implementation stage when various rehabilitation efforts would disturb existing soil and vegetation cover. The methods used for vegetation manipulation, to a large degree, determine the severity of implementation. Unfortunately, studies on various treatments do not convincingly support any one method of vegetation manipulation.

Brush control, using prescribed burning and herbicide spraying, would be applied to 49,407 acres. When accomplished under proper conditions, prescribed burning can effectively kill sagebrush without seriously damaging or altering the understory. However, where high intensity fire completely consumes organic matter, cover is eliminated and infiltration decreased (Gifford 1975). The resulting sedimentation can range from very high to nil depending on specific conditions.

Where proper burning conditions existed in the ES Area, sagebrush would be killed; but some understory and debris would remain to minimize the effects of the lost sagebrush cover. In the long term the sagebrush could be replaced by grass and forbs (Sturges 1975); however, ground cover might not increase above that under the Proposed Action. Where forbs were present, they could replace some of the soil stability that would be lost with the destruction of the deep sagebrush root systems. Reestablishment of vegetation in the long term could alleviate sedimentation problems brought about by the manipulation.

Spraying of 12,707 acres would effectively kill up to 90 percent of the sagebrush and would tend to favor a grass cover (Sturges 1975). Gifford (1968) prefers spraying rather than plowing or ripping as a rehabilitation practice. As with the burning, spraying might not increase the ground cover significantly more than expected under the Proposed Action.

Short-term impacts resulting from both burning and spraying would have the potential for severely altering existing vegetation cover, which could result in a short-term increase in sedimentation due to higher erosion rates. Long-term sedimentation could be slightly higher on the sprayed areas because deep root systems would be eliminated. Generally, no difference would be expected between the long-term impacts of the brush control under this alternative and the brush control under the proposed action.

Short-term impacts would depend on variables in each specific treatment area, including the area's size, the season of treatment (particularly late summer or fall), the soil characteristics, steepness of slopes, amount of precipitation, etc. Generally, increased sedimentation, increased surface runoff, and decreased water quality would result from the brush control treatments in the short term. Long-term improvement would be comparable to that expected under the Proposed Action.

The 43,000 acres of seeding under this alternative would produce virtually the same long-term effects as the seeding under the Proposed Action. The seeded areas would probably respond with increased productivity in one or two years but would not necessarily produce any more ground cover in the form of new plants or litter in the long term.

In summary, short-term impacts of this alternative have the potential of being much more severe than impacts resulting from the Proposed Action. However, long-term impacts of this alternative would not be significantly different from those under the Proposed Action (see Chapter 3).

Impacts on Vegetation

Forage Allocation. Alternative 4 would require a downward adjustment from 58,731 AUMs annual use (1972-1976 average) to 40,443 AUMs, a 31 percent reduction. Vegetation grazed annually by livestock and wildlife together would be 45,090 AUMs (36,072,000 pounds air-dried forage). This would be 5 percent more than the Proposed Action (4,647 wildlife AUMs plus 38,138 livestock AUMs, 34,228,000 pounds).

An instant and long-term beneficial effect from the downward adjustment on the overall vegetation resource would be a reduction in the amount of herbage consumed by livestock. Presently, an estimated 66,040,000 pounds of palatable grasses and forbs are being produced annually on public lands in the ES Area. Under this alternative, consumption would decrease from 46,984,800 to 32,354,400 pounds annually, leaving 14,630,400 pounds more vegetation on the land each year.

Under present stocking levels approximately 11.7 percent of total vegetation production is being consumed as forage by livestock. With this alternative that consumption would decrease to 8.0 percent. The impact of leaving more herbaceous (nonwoody) plant material is expected to be much greater than that implied by the small percentage decrease of total production harvested by livestock. Increased herbaceous vegetation left unharvested would remain as litter and help protect the soil from wind and/or water erosion, as described in Chapter 3, "Impacts on Vegetation."

Improved vigor of forage plants is expected from reduced grazing with this alternative. Considered alone, adjustment in stocking rate would lessen the grazing pressure on less desirable areas such as slopes above 20 percent and areas greater than one mile from water. However, grazing pressure would remain relatively uniform within the areas grazed. The lower number of livestock would simply remain in the desirable grazing areas for a longer period of time and would not be forced to utilize the less desirable areas (Hormay 1970). The grazing systems, as in the Proposed Action, would reduce this effect. Generally, less total area would be grazed by livestock. Forage plants in the ungrazed or lightly grazed areas would, in a few years, gain increased vigor, develop healthy root systems, store abundant food reserves, produce viable seeds, and provide an abundance of plant litter.

Range Improvements. Alternative 4 includes construction and/or maintenance of several kinds of range improvements considered essential to fully implement the grazing systems as well as land treatments to improve the productivity and dependability of livestock forage. The improvements are shown in Table 8-19 by allotment; they are grouped into three broad categories: water developments, management facilities, and land treatments. See

Table 8-21 for the kinds of range improvements in each category and the expected short- and long-term disturbance from the construction and physical presence of these improvements.

There are differences between the Proposed Action and this alternative with regard to the amount of vegetation disturbance. With Alternative 4 the construction phase of water developments and management facilities would temporarily remove approximately 375 acres of existing vegetation from production. Beyond the construction phase the improvements would permanently remove approximately 430 acres from production. The short-term disturbance from developing dependable watering places would be 85 acres with the Proposed Action and 132 acres with Alternative 4. The long-term disturbance would be 116 acres and 364 acres, respectively. The short-term disturbance from construction of management facilities would be 172 acres with the Proposed Action and 243 acres with Alternative 4. The long-term disturbance would be 54 acres and 65 acres, respectively. The short- and long-term effects on vegetation from water developments and management facilities were identified in Chapter 3, "Impacts on Vegetation," and are not repeated here.

Land treatments are a very important component of Alternative 4. They are also the principal difference between the Proposed Action and this alternative. The Proposed Action includes treating 5,852 acres to convert existing vegetation into vegetation that is more desirable as livestock forage. Alternative 4 includes treating 87,653 acres for this same reason.

The kind and degree of vegetation changes expected from herbicide spraying (brush control), prescribed burning (brush control), and artificial seeding are discussed in Chapter 3 for several allotments. These changes would occur on a much broader scale under Alternative 4 but would be similar enough not to warrant an in-depth analysis by allotment.

Increased vegetation production would be expected as a result of range rehabilitation but perhaps not as much as one might expect. In order to establish a particular kind of vegetation, a portion of the existing vegetation that is currently producing some palatable forage must first be removed. Therefore, even though crested wheatgrass would be more productive and dependable on a yearly basis, only the net difference in production can be termed an increase. There would be approximately 8,617 AUMs (6,893,600 pounds) more production of desirable palatable herbage production in fifteen years as a result of land treatments.

Grazing Systems. Sixteen allotments have grazing systems under this alternative that differ from those under the Proposed Action. These are included in Table 8-18 along with differences in season of use. The grazing system names are designated with letters and numbers in the table. For an explanation of the grazing systems, see Chapter 1, "Grazing Systems."

The eighteen allotments listed in Table 8-18 were analyzed in the same way and to the same degree under this alternative as under the Proposed Action. To understand the process, the reader should review the "Impacts on Vegetation" section of Chapter 3, paying particular attention to the review of applicable literature and to Tables 3-5 and 3-6. Table 3-6 is especially important because the timing of defoliation (grazing) through the yearly growth cycle largely determines vegetation response to grazing. To facilitate a meaningful analysis, the grazing systems were grouped into categories in Table 8-22, which shows short-term (one year) vegetation impacts by grazing use period. The effects of defoliation (grazing) shown in Table 3-6 were considered when determining the single-year impacts to vegetation described in Table 8-22. The qualifying terms; "slightly," "greatly," and "normal" were used to assist the reader in gaining an understanding of the magnitude (degree) of impact. These terms help describe the three principal plant responses: vigor, seed production, and litter accumulation. The descriptive footnotes on the table should be carefully reviewed.

When reading the short-term impacts to vegetation in Table 8-22 one may incorrectly conclude that a single grazing treatment would impact the vegetation beyond its ability to recover. Hormay (1970) pointed out that perennial plants store enough food to last for several years. So even if the plants are defoliated (grazed) for a year or two, they do not die. Under a grazing program that allows continuous close grazing year after year during the green period, this situation does not apply. As a result, the reserves are ultimately depleted and the plants die. However, by periodically resting the plants from defoliation (grazing) the basic needs of forage plants can be met. Hormay concluded that one or two years of growing season rest are usually adequate to restore plant vigor.

The reader is cautioned to review not only the one-year impacts for any given allotment, but also the net long-term impacts shown in Table 8-23. Table 8-22 reflects impacts from grazing systems only; Table 8-23 shows the conbined effects of forage allocation, range improvements, and grazing systems.

Vegetation Objectives. The effectiveness of the two interacting factors, adjustment in stocking rates and grazing systems, was measured against specific objectives for each allotment (Table 1-4). The objectives would be fully met in fifteen years on ten of the eighteen allotments analyzed under Alternative 4. The objectives would be partially met on seven allotments. On one allotment, Clover Creek, it would not be possible to reach any of the objectives with the proposed grazing system under this alternative. The seven allotments on which the objectives would only be partially met are shown along with the Clover Creek Allotment in Table 8-24 which compares the present situation, specific objective, and

TABLE 8-**22**

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION
BY GRAZING SYSTEM AND GRAZING USE PERIOD
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES	PERIOD OF GRAZING USE OR NON-USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATION (GRAZING) 3/ OR NON-DEFOLIATION (RESTING) 4/
REST ROTATION SYSTEMS USING TWO TREATMENTS RR-2			
**Rattlesnake Allotment Thorn Creek Pasture Preacher Creek Pasture	10,045	One pasture grazed late summer (7/28-8/09)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation normal, seedlings established.
REST ROTATION SYSTEMS USING THREE TREATMENTS RR-3			
Fricke Allotment	87	Entire Allotment grazed early spring through late spring (4/16-6/15) on Year 1	Vigor, seed production, and litter accumulation greatly reduced.
		Entire allotment grazed early summer to late summer (6/16-8/14) on Year 2	Vigor, seed production, and litter accumulation reduced; seed trampling effectiveness reduced from grazing a month prior to seed ripe (7/20) but some seed planted.
		Entire allotment completely rested on Year 3	Vigor, seed production, and litter accumulation less than normal after two years grazing in late spring and early summer; seedlings have an opportunity to establish.
Ticeska Allotment	3,891	One pasture grazed early spring to late spring (4/01-5/15)	Vigor, seed production, and litter accumulation reduced.
		One pasture grazed late spring to early summer (5/16-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation less than normal after two years grazing in late spring and early summer.
MODIFIED REST ROTATION SYSTEMS USING THREE TREATMENTS MRR-3			
**Black Canyon Allotment Dead Horse Pasture Four Mile Pasture Open Crossing Pasture	27,114	One pasture grazed early spring to late spring (4/16-5/07)	Vigor and seed production moderately reduced, litter accumulation reduced (standing dead).
		One pasture grazed late spring (5/08-5/28)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation less than normal after two years grazing in late spring and early summer.
**Dempsey Allotment Dry Creek Pasture Dead Pasture Rim Pasture	11,230	One pasture grazed late spring (5/01-6/15)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early fall through late fall (10/15-12/15)	Vigor not significantly affected, some seed planted by trampling - especially in crested wheatgrass seedings, litter accumulation reduced (standing dead).
		One pasture rested during the growing season but up to 50 percent of available AUMs may be grazed early fall through late fall (10/15-12/15)	Same as above but with less seed planted and less reduction in litter accumulation; seedlings planted the previous year have opportunity to establish through a year rest during the growing season.
DEFERRED ROTATION SYSTEMS USING TWO TREATMENTS DR-2			
Black Buttes Allotment	49	Entire allotment grazed late spring to early summer (6/01-6/30) on Year 1	Vigor, seed production, and litter accumulation greatly reduced; a high percentage of last year's seedlings destroyed, some survive.
		Entire allotment grazed summer to late summer (7/01-7/30) on Year 2	Vigor, seed production, and litter accumulation reduced, seed trampling effectiveness reduced from grazing three weeks prior to seed ripe (7/20), but some seed planted.
Canal Allotment	511	Entire allotment grazed late spring through early summer (5/01-7/15) on Year 1	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, a few survive.
		Entire allotment grazed late summer to early fall (7/16-9/30) on Year 2	Vigor moderately to slightly reduced, much crested wheatgrass seed planted by trampling, litter accumulation reduced.
**Clover Creek Allotment Coyote Hill Pasture Monument Gulch Pasture	25,771	One pasture grazed late spring to early summer (5/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, very vew survive.
		One pasture grazed early fall to late fall (10/16-11/23)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead).

TABLE 8-22 Continued

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION BY GRAZING SYSTEM AND GRAZING USE PERIOD UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON-USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATION (GRAZING) 3/ OR NON-DEFOLIATION (RESTING) 4/
DR-2 Continued			
Compound Allotment	457	Entire allotment grazed late spring through early summer (5/15-7/15)	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, a few survive.
		Entire allotment grazed late summer to early fall (7/16-9/15)	Vigor moderately to slightly reduced, the limited native species seed produced after a year of spring grazing planted by trampling, litter accumulation reduced.
**Dempsey Allotment High Pasture Cedar Pasture	1,125	Graze one pasture late spring to early summer (6/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, very few survive.
		Graze one pasture early fall (10/15-10/31)	Vigor not significantly affected, limited seed planted by trampling, litter accumulation reduced (standing dead).
Picabo Allotment	11,518	Graze one area (several pastures) late spring 5/01-5/31)	Vigor, seed production, and litter accumulation greatly reduced.
		Graze another area (remaining pastures) late spring to early summer (6/01-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
"46" Allotment	208	Graze entire allotment late spring to early summer (5/01-6/30) on Year 1	Vigor, seed production, and litter accumulation greatly reduced; most of last year's seedlings destroyed, very few would survive.
		Graze entire allotment early summer through late summer (7/01-8/30)	Vigor, seed production, and litter accumulation moderately reduced; only limited seed trampling as much of the seed is consumed prior to seed ripe (7/20).
DEFERRED ROTATION SYSTEMS USING THREE TREATMENTS DR-3			
***King Hill Allotment Bellmare Pasture Hog Creek Pasture Walker Reservoir Pasture	16,748	Graze two pastures from early spring to early summer (4/16-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
		Graze one pasture late spring to early summer (5/25-6/30)	Vigor, seed production, and litter accumulation greatly reduced.
Macon Flat Allotment	38,982	Graze entire allotment every year during late spring; one pasture from 5/01-5/15, another pasture from 5/16-5/31, another pasture 6/01-6/15	Vigor, seed production, and litter accumulation greatly reduced on the entire allotment.
		Graze entire allotment again early fall to late fall (10/15-11/30)	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead).
**Rattlesnake Allotment East Homestead Pasture West Homestead Pasture Turkey Butte Pasture	10,236	One pasture grazed late spring (5/05-5/19) then grazed again late summer (7/14-7/27)	Vigor, seed production, and litter accumulation reduced by two weeks late spring grazing; it is further reduced by late summer grazing; limited seed planted by trampling.
		One pasture grazed late spring (5/20-6/15)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early summer (6/16-7/14)	Vigor, seed production, and litter accumulation reduced; most of last year's seedlings destroyed, a few survive.
Track Allotment	1,974	One pasture grazed late spring (5/01-6/04)	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed late spring to early summer (6/04-7/10)	Vigor, seed production, and litter accumulation reduced to greatly reduced; most of last year's seedlings destroyed, some survive.
		One pasture grazed early summer to late summer (7/11-8/15)	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
DEFERRED ROTATION SYSTEMS USING FOUR TREATMENTS DR-4			
**Clover Creek Allotment Bliss Point Pasture Bray Lake Pasture Canal Pasture White Arrow Spring Pasture	16,664	One pasture grazed early spring to late spring (4/01-5/26)	Vigor, seed production, and litter accumulation moderately to greatly reduced.
		One pasture grazed late fall to winter (11/03-12/31)	Vigor and reproduction not significantly affected, litter accumulation reduced; some crested wheatgrass seed planted by trampling.
		One pasture grazed early spring to late spring (4/01-5/26)	Vigor, seed production, and litter accumulation moderately to greatly reduced; practically all of last year's seedlings destroyed before they get a chance to establish.
		One pasture grazed early spring to late spring (4/15-5/26) then again in late fall	Vigor, seed production, and litter accumulation moderately to greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation reduced (standing dead) by fall grazing.

TABLE 8-22 Continued

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION
BY GRAZING SYSTEM AND GRAZING USE PERIOD
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (ACRES)	PERIOD OF GRAZING USE OR NON-USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATION (GRAZING) 3/ OR NON-DEFOLIATION (RESTING) 4/
DR-4 Continued			
Kinzie Butte Allotment	8,684	Graze one pasture early spring to late spring (4/16-6/10)	Vigor, seed production, and litter accumulation greatly reduced.
		Graze one pasture early spring to late summer (4/16-7/20) with sheep only	Vigor, seed production, and litter accumulation reduced.
		Graze one pasture late summer through late fall (7/20-12/15)	Vigor moderately to slightly reduced with much seed planted by trampling prior to 3/31, vigor not significantly affected with some seed planted by trampling after that date; litter accumulation reduced.
		Graze one pasture late spring to late summer (6/10-7/20) then again early fall through late fall (10/16-12/15)	Vigor, seed production, and litter accumulation reduced, most of last year's seedlings destroyed, some survive.
DEFERMENT OF USE UNTIL AFTER SEED RIPE DUS			
***King Hill Allotment North Pasture	5,034	Graze anytime from late summer through late fall (after 7/31) to harvest 401 available AUMs	Vigor slightly reduced with much seed planted by trampling prior to 8/31, vigor not significantly affected with some seed planted by trampling after that date; litter accumulation reduced.
MODIFIED DEFERRED ROTATION WITH SHEEP USE (8 AUMS) IN TWO PASTURES USING THREE TREATMENTS WITH CATTLE MDR-3			
**Black Canyon Allotment City of Rocks Pasture Connet Spring Pasture Mormon Reservoir Pasture	23,441	Graze one pasture late spring to early summer (5/29-6/28)	Vigor, seed production, and litter accumulation greatly reduced.
		Graze one pasture late summer (7/30-8/27)	Vigor slightly reduced, much seed planted by trampling, litter accumulation reduced.
		Graze one pasture early summer to late summer (6/29-7/29)	Vigor, seed production, and litter accumulation reduced; some of last year's seedlings destroyed, some would survive.
ANNUAL SPRING GRAZING			
***King Hill Allotment South Pasture	3,586	Graze 70 AUMs of 108 available AUMs with sheep every year in late spring (5/01-5/25) trail cattle through to and from summer ranges	Vigor, seed production, and litter accumulation greatly reduced.

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***), that allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" in Chapter 3 narrative section. Specific allotment and pasture locations are shown on Map 1-2.

2/ Both period of use, e.g., "early spring" and "late spring", and specific calendar dates are given. The periods of use are the same periods for which phenological (life cycle) occurrences and effects of defoliation (grazing) are defined in Table 3-6. The calendar dates provide a means to determine more precisely what the impacts of grazing within a period will be. For example, plant vigor is reduced to a greater degree by grazing between 7/16 and 7/31, when the plant is still green, than by grazing between 8/16 and 8/31, when the plant is almost dormant, even though the range of both dates falls within the defined late summer use period.

3/ Modifying words are used in the statement of impact. It is not possible to exactly quantify the impact of grazing on plant vigor, reproductive success, or litter (dead plant parts) accumulation except under controlled conditions. Species variation, normal variation within species, grazing use period, class of grazing animal (cattle, sheep), animal behavior and other factors defy quantification. Still, the magnitude of expected impact may be greater (or lesser) in some instances than in others. The magnitude is defined according to this spectrum:

LESSER Not Significantly Affected : Slightly Reduced : Moderately Reduced : Reduced : Greatly Reduced → GREATER

4/ Non-defoliation, or resting forage plants from grazing has beneficial effects. The plant is able to complete its NORMAL annual life cycle, or at least part of the cycle, without the stressful effects of losing part of its food manufacturing tissue (leaves and stems) or part of its reproductive tissue (seedheads and seeds). Table 3-6 shows some effects from defoliation at various periods through the year.

The beneficial impacts of part-season or whole-season rest are defined according to this spectrum:

Much Less Than Normal	Less Than Normal	Nearly Normal	Normal
This is the condition of plants weakened by several seasons of very stressful defoliation.			This is the condition of plants protected from grazing.

TABLE 8 - 23

NET LONG-TERM IMPACTS OF FORAGE ALLOCATION AND GRAZING SYSTEM(S)
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ Pounds	CONSUMPTION BY LIVESTOCK WITH ALTERNATIVE 4 2/ Pounds	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG-TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, OR A COMBINATION OF THE TWO CAUSE AGENTS 3/
BLACK BUTTES	5,600	3,200	43% Decrease	The stocking rate under Alternative 4 would require 2,400 pounds less forage than the present stocking rate and the same amount as the Proposed Action. The two treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. Nearly the entire allotment would be seeded. A stocking rate heavier than the initial stocking rate would lead to a net decrease in vigor, seed production, and litter accumulation with this grazing system. The long-term productivity of the seeding would be jeopardized if stocking increased substantially.
BLACK CANYON	3,483,200	2,252,800	35% Decrease	The stocking rate under Alternative 4 would require 1,230,400 pounds less forage than the present stocking rate, but 426,400 pounds more than the Proposed Action. The modified three-treatment rest-rotation and modified three-treatment deferred rotation grazing systems would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. A stocking rate heavier than the initial stocking rate could have an adverse long-term impact because most of the grazing would occur prior to seed ripe (7/20).
CANAL	54,400	37,600	31% Decrease	The stocking rate under Alternative 4 would require 16,800 pounds less forage than the present stocking rate, but the same amount as the Proposed Action. The two-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would remain constant over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years on untreated areas. The grazing system would meet the needs of crested wheatgrass but it would just barely meet the basic plant needs of native species. A stocking rate heavier than the initial stocking rate could lead to a decrease in vigor, seed production, and litter accumulation of native forage species.
CLOVER CREEK	3,062,400	1,638,400	46% Decrease	The stocking rate under Alternative 4 would require 1,424,000 pounds less forage than the present stocking rate and only 13,600 pounds more than the Proposed Action. The four-treatment deferred rotation and two-treatment deferred rotation grazing systems would not provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing systems would result in a net long-term decrease of plant vigor and seed production. The total ground cover of plant litter would decrease over the long term. The specific objectives of the Proposed Action for this allotment would not be met in 15 years on untreated areas because of grazing during the critical spring growing season three years out of four. It would be doubtful if even the basic plant needs for crested wheatgrass would be met with the four-treatment deferred rotation grazing system under Alternative 4.
COMPOUND	66,400	48,000	28% Decrease	The stocking rate under Alternative 4 would require 18,400 pounds less forage than the present stocking rate and the same amount as the Proposed Action. The two-treatment deferred-rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance to slight increase of plant vigor and seed production. The total ground cover of plant litter would remain constant or increase slightly over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
DEMPSEY	2,093,600	1,019,200	51% Decrease	The stocking rate under Alternative 4 would require 1,074,400 pounds less forage than the present stocking rate, but 126,400 pounds more than the Proposed Action. The three-treatment modified rest rotation and two-treatment deferred rotation grazing systems would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. The vigor and productivity of the crested wheatgrass seedings and brush control treatments would be maintained over the long term.
FRICKE	13,600	5,600	59% Decrease	The stocking rate under Alternative 4 would require 8,000 pounds less forage than the present stocking rate and the same amount as the Proposed Action. The three-treatment rest-rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years. The vigor and productivity of the crested wheatgrass seedings would be maintained over the long term.

TABLE 8 - 23

NET LONG-TERM IMPACTS OF FORAGE ALLOCATION AND GRAZING SYSTEM(S)
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ Pounds	CONSUMPTION BY LIVESTOCK WITH ALTERNATIVE 4 2/ Pounds	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG-TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, OR A COMBINATION OF THE TWO CAUSE AGENTS 3/
INDIAN	3,868,800	2,130,400	45% Decrease	The stocking rate under Alternative 4 would require 1,738,400 pounds less forage than the present stocking rate, but 219,200 pounds more than the Proposed Action. The three-treatment modified deferred-rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years. All use above that in the Proposed Action would be made in the fall. The vigor and productivity of the crested wheatgrass seedings would be maintained over the long term.
KING HILL	2,402,400	1,138,400	53% Decrease	The stocking rate under Alternative 4 would require 1,264,000 pounds less forage than the present stocking rate, but 235,200 pounds more than the Proposed Action. A net long-term improvement would occur on part of the allotment. The combined forage allocation and grazing system would result in net long-term improvement of plant vigor and seed production as well as an increase in the total ground cover of plant litter on areas not easily accessible to cattle. The effect of the substantial downward adjustment in stocking rate would be to lessen the amount of area adversely impacted. The three-treatment deferred rotation and annual spring grazing systems would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, flat areas, and other areas easily accessible to cattle. Grazing in all four pastures every year during the most critical spring and early summer use periods would not allow enough vigor, seed production, and litter accumulation to reverse the present downward trend on areas heavily used by livestock. Deferment of use until after seed ripe time in the North Pasture along with the proposed stocking rate would result in a net long-term improvement. Vegetation condition, plant vigor, seed production, and litter accumulation would all improve. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years on untreated areas. The basic plant needs for crested wheatgrass would not be met by grazing the existing and proposed (under Alternative 4) seedings every spring. The plants would be expected to weaken and eventually die on heavily used areas.
KINZIE BUTTE	1,060,800	720,800	32% Decrease	The stocking rate under Alternative 4 would require 340,000 pounds less forage than the present stocking rate, but 144,800 pounds more than the Proposed Action. The four-treatment deferred rotation grazing system would just provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production on areas not heavily used by livestock. On those areas the total ground cover of plant litter would increase over the long term. However, on areas near water, flat non-rocky areas, and other areas easily accesible to livestock, a net long term decrease in plant vigor, seed production, and litter accumulation would be expected. This would result from two consecutive years of grazing all available AUMs during the most critical growing seasons followed by one year of grazing after seed ripe (7/20) followed by grazing 66 percent of available AUMs during a critical growth period. Crested wheatgrass would be expected to maintain itself with this grazing system but its vigor would not be optimum. Native forage plants would not be expected to maintain themselves on heavy use areas. The specific objectives of the Proposed Action for this allotment would only partially be met in 15 years.
LAVA	1,999,200	800,000	60% Decrease	The stocking rate under Alternative 4 would require 1,199,200 pounds less forage than the present stocking rate, but 260,000 pounds more than the Proposed Action. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a new long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years on untreated areas. The stocking rate under Alternative 4 would be higher than the Proposed Action. However, the classic rest-rotation grazing system, which provides for grazing during the critical growing season only one year out of three, is expected to improve the native forage species and maintain the crested wheatgrass seedings in high vigor.

TABLE 8 - 23

NET LONG-TERM IMPACTS OF FORAGE ALLOCATION AND GRAZING SYSTEM(S)
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ Pounds	CONSUMPTION BY LIVESTOCK WITH ALTERNATIVE 4 2/ Pounds	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG-TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, OR A COMBINATION OF THE TWO CAUSE AGENTS 3/
MACON FLAT	3,743,200	2,693,600	28% Decrease	The stocking rate under Alternative 4 would require 1,009,600 pounds less forage than the present stocking rate, but 688,800 pounds more than the Proposed Action. A net long-term improvement would occur on areas least accessible to livestock but still used under present stocking. However, the three-treatment deferred-rotation grazing system would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, on flat areas, and non-rocky areas easily accessible to livestock. The combined forage allocation and grazing system would result in a net long-term reduction of plant vigor and seed production on areas heavily used by livestock. The total ground cover of plant litter would remain constant for the allotment over the long term. The present overgrazed condition would continue on accessible areas. The present downward trend on 24 percent of the allotment would continue. Grazing each of the pastures with this stocking rate for a two week period during the most critical growing period would not allow the native forage species sufficient rest. Crested wheatgrass would probably be able to maintain itself with this grazing system, but vigor and productivity would not be optimum. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
PICABO	778,400	93,600	88% Decrease	This is a unique situation. Under the Proposed Action 420 AUMs (336,000 pounds air dried forage) are proposed for livestock on public lands; 303 AUMs (242,400 pounds) of wintering deer forage are proposed for intermingled private lands. Under Alternative 4 the 303 AUMs for deer would come off public land leaving only 117 AUMs (93,600 pounds) available for livestock. The proposed initial stocking rate would require 684,000 pounds less forage from public land than the present stocking rate, so a net long-term improvement would occur over most of the allotment. Even though the two-treatment deferred-rotation grazing system calls for grazing the allotment during the most critical growing season, the grazing pressure would be so reduced that all areas, except those where cattle concentrate, would respond very rapidly. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. Crested wheatgrass seedings would maintain themselves but vigor might not be optimum.
RATTLESNAKE	1,652,000	499,200	70% Decrease	The stocking rate under Alternative 4 would require 1,152,800 pounds less forage than the present stocking rate and 100,000 pounds less than the Proposed Action, so a net long-term improvement is expected over most of the allotment. The two-treatment rest-rotation grazing system (50 percent of the allotment) would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The three-treatment deferred-rotation grazing system (50 percent of the allotment) would not provide the necessary rest from grazing to meet the basic plant needs on areas near water, flat areas, and other areas easily accessible to cattle. Grazing during the critical growing season in each pasture would probably not allow enough vigor, seed production, and litter accumulation to reverse the present downward trend on areas heavily used by livestock. The effect of the substantial downward adjustment in stocking rate would be to greatly lessen the amount of area adversely impacted. Crested wheatgrass seedings would be expected to maintain themselves under this grazing system, but vigor and productivity would be less than optimum. The specific objectives of the Proposed Action for this allotment would be only partially met in 15 years.
TICESKA	660,800	248,000	62% Decrease	The stocking rate under Alternative 4 would require 412,800 pounds less forage than the present stocking rate and 7,200 pounds less than the Proposed Action. The three-treatment rest-rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs of crested wheatgrass, the key management species. Most desirable native species have disappeared from the allotment by past overgrazing and repeated fire. Annual grasses and low producing perennials would occupy the untreated areas. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.

TABLE 8 - 23

NET LONG-TERM IMPACTS OF FORAGE ALLOCATION AND GRAZING SYSTEM(S) UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ Pounds	CONSUMPTION BY LIVESTOCK WITH ALTERNATIVE 4 2/ Pounds	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG-TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, OR A COMBINATION OF THE TWO CAUSE AGENTS 3/
TRACK	246,400	212,800	14% Decrease	The stocking rate under Alternative 4 would require 33,600 pounds less forage than the present stocking rate, but 105,600 pounds more than the Proposed Action. The three-treatment deferred rotation grazing system would just provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term maintenance or slight inprovement of plant vigor and seed production. The total ground cover of plant litter would increase slightly over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
"46"	20,000	11,200	44% Decrease	The stocking rate under Alternative 4 would require 8,800 pounds less forage than the present stocking rate and the same amount as the Proposed Action. The two-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. The crested wheatgrass seeding (on 53 percent of the allotment) would be expected to maintain good vigor and productivity over the long term.
"101"	463,200	244,000	47% Decrease	The only real distinction between the alternative and the Proposed Action is a month longer grazing season during the winter and early spring under the alternative; land treatments are also planned. The stocking rate under Alternative 4 would require 219,200 pounds less forage than the present stocking rate and the same amount as the Proposed Action. The deferment until after dormancy grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years on untreated areas. The vigor and productivity of the crested wheatgrass seedings would be expected to be excellent over the long term.
TOTAL FOR THOSE ALLOTMENTS ANALYZED	25,674,400	13,796,800	46% Decrease	

1/ Present consumption of forage represents the 1972-1976 average licensed use (in AUMs) multiplied by 800 pounds per AUM.

2/ Proposed consumption of forage represents the Alternative 4 initial stocking rate (in AUMs) multiplied by 800 pounds per AUM.

3/ Table 1-4 shows specific objectives of the Proposed Action. Only the objectives for "Livestock Forage Production", "Vegetation Composition", and "Vegetation Condition Class" are considered here. Because land treatments are part of Alternative 4 the basic plant needs for crested wheatgrass were considered as well as those of native forage species. Crested wheatgrass is very hardy and holds up well under grazing pressure. Generally, the description of impacts was developed with the needs of the less hardy native species in mind with a short statement of the expected response of crested wheatgrass.

TABLE 8 - 24

COMPARISON OF EXPECTED RESULTS WITH SPECIFIC OBJECTIVES FOR ALLOTMENTS HAVING IDENTIFIED PROBLEMS WITH THE GRAZING SYSTEM UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY (AUMS			VEGETATION COMPOSITION ON DESIGNATED KEY MANAGEMENT AREAS (PERCENT OF TOTAL HERBAGE PRODUCTION)				VEGETATION CONDITION CLASS (ACRES)			
	PRESENT	OBJECTIVE	EXPECTED	PERCENT COMPOSION OF KEY SPECIES		OBJECTIVE	EXPECTED	PRESENT		OBJECTIVE	EXPECTED
Canal	47	80	101	Combination of:	3%	8%	5%	Poor	112	82	---
				Bluebunch wheatgrass				Fair	399	317	149
				Thurber needlegrass				Seeding	---	112	262
				Bottlebrush Squirreltail				Br. Cont.	---	---	100
Clover Creek	2,768	3,497	3,280	Crested wheatgrass	5%	10%	4%	Seeding	2,597	3,395	6,643
				Sandberg bluegrass	5	10	6	H. Dist.	4,439	424	1,268
				Nevada bluegrass	10	20	8	Poor	14,651	16,125	12,263
				Thurber needlegrass	10	20	8	Fair	18,680	20,423	20,193
								Good	2,068	2,068	2,068
Compound	60	67	63	Bluebunch wheatgrass	3%	10%	4%	Poor	457	---	457
								Fair	---	457	---
King Hill	1,470	1,895	1,589	Bluebunch wheatgrass	5%	15%	4%	Seeding	2,599	2,599	2,924
				Thurber needlegrass	5	15	4	Poor	19,657	11,670	16,332
				Sandberg bluegrass	15	35	20	Fair	2,189	10,176	5,189
				Bottlebrush squirreltail	15	35	17	Good	923	923	923
				Crested wheatgrass (seedings only)	50	50	40				
Kinzie Butte	901	1,170	1,186	Combination of:	10%	20%	15%	Seeding	330	330	2,605
				Sandberg bluegrass &				Poor	5,756	4,756	2,954
				bottlebrush squirreltail				Fair	2,598	2,598	2,070
								Br. Cont.	---	1,000	1,055
				Crested wheatgrass	30	60	40				
Lava	994	1,559	1,817	Combination of:	20%	20%	25%	Poor	21,430	5,600	10,700
				Bluebunch wheatgrass				Fair	6,570	17,900	9,800
				Thurber needlegrass				Br. Cont.	---	2,500	4,500
				Bottlebrush squirreltail				Seeding	---	2,000	3,000
Macon Flat	3,367	4,414	3,719	Combination of:	35%	50%	35%	Poor	19,779	18,579	13,450
				Bluebunch wheatgrass				Fair	18,749	18,778	18,078
				Bottlebrush squirreltail				Good	454	1,625	454
				Sandberg bluegrass				Seeding	---	---	4,000
								Br. Cont.	---	---	3,000
Rattlesnake	924	1,372	1,698	Bluebunch wheatgrass	5%	9%	7%	Seeding	465	465	6,629
				Antelope bitterbrush	1	5	2	H. Dist.	6,825	2,840	225
								Poor	4,976	8,863	4,989
								Fair	5,489	5,273	3,596
								Good	2,526	2,840	4,842

expected results. The three categories of objectives shown in Table 8-24 (livestock grazing capacity, vegetation composition, and vegetation condition) are discussed separately below.

Grazing Capacity. The livestock grazing capacity objectives are expected to be fully met for the Canal, Kinzie Butte, Lava, and Rattlesnake Allotments (6 percent of the ES Area). The objectives would also be met on 27 allotments (53 percent of the ES Area) not shown in Table 8-24. Vegetation available for livestock forage would increase from the present production but would fall short of the stated objectives for the Clover Creek, Compound, King Hill, and Macon Flat Allotments (19 percent of the ES Area). In addition, increased forage (but below the stated objective) would be expected on six allotments (22 percent of the ES Area) not shown in Table 8-24. As with the Proposed Action, the livestock grazing capacity would be expected to remain approximately the same for the Tikura Allotment (less than 1 percent of the ES Area) but would fall short of the stated objective.

Vegetation Composition. The vegetation composition objectives shown in Tables 1-4 and 8-24 were based on field studies of present composition at specific locations in each allotment for monitoring purposes. The vegetation composition objectives are expected to be fully met on 23 allotments (34 percent of the ES Area) not shown on Table 8-24. Key species composition would be higher than present, but less than the stated objectives for all eight allotments shown in Table 8-24 (29 percent of the ES Area) and for five allotments (21 percent) not shown. Composition of key species would remain approximately the same in the Spud Patch, Spring Creek, and Tikura Allotments (1 percent of the ES Area). The composition of key species would decrease from present composition in the North Gooding, Timmerman East, and Timmerman West Allotments (15 percent of the ES Area) primarily as a result of the proposed increase in stocking rate.

Vegetation Condition. Vegetation condition objectives were set for the Proposed Action using existing observed and/or measured field data. Analysis became especially difficult when over 87,000 acres of land treatment had to be considered under this alternative. Considering stocking rate, season of use, grazing system, and the large amount of land treatment involved, best professional estimates were made. The vegetation condition objectives are expected to be fully met on the Canal, Kinzie Butte, and Rattlesnake Allotments (5 percent of the ES Area, shown on Table 8-24). In addition, the objectives would be met on 30 allotments (65 percent of the ES Area) not shown on the table. Vegetation condition would improve from the present but fall short of meeting the stated objectives on the Clover Creek, King Hill, and Lava Allotments (17 percent of the ES Area). In addition, improved vegetation condition (but below the stated objectives) is expected on four allotments (13 percent of the ES Area) not shown on the table. The vegetation condition in the Compound and Tikura Allotments (less than 1 percent of the ES Area) would remain approximately the same as presently but would fall short of the stated objectives.

Vegetation Production. With Alternative 4, increased vegetation production would be expected through reduced grazing pressure (forage allocation) and grazing systems. Table 8-25 shows the increased production (in AUMs) attributable to both grazing systems and range rehabilitation (land treatment) by allotment. There would be approximately 5,409 AUMs (4,327,200 pounds) more production of desirable palatable herbage production in fifteen years as a direct result of reduced stocking and improved grazing management.

Thirty-five allotments having positive numbers in the "Production Attributable to Grazing Management System" in Table 8-25 would show a net gain after 15 years in production of palatable vegetation. Those in parenthesis, with a minus sign, would show a net loss after 15 years.

Two of the allotments, North Gooding and Timmerman West, would lose productivity from their grazing systems, primarily from a 60 and 108 percent increase in stocking rate, respectively. Overall forage production would increase in the North Gooding Allotment due to the large amount of land treatments.

Five of the allotments would show an overall increase in forage production, primarily due to land treatments, but would lose a portion of that gain because of an inadequate grazing system. These allotments (Clover Creek, King Hill, Kinzie Butte, Macon Flat, and Timmerman East) are discussed separately below.

The present problems of poor livestock distribution and repeated grazing during the growing season on the same area would generally be greatly reduced by the adjustments in stocking rate and implementation of the grazing management systems called for in this alternative. The present problem of heavy utilization of yearly forage production (71 percent presently, 46 percent under Proposed Action) would be partly resolved because 49 percent would be utilized under this alternative.

The present problem of 65 percent of the total yearly livestock grazing taking place during the early spring to early summer green period would be resolved on about 84 percent of the ES Area. Under Alternative 4, as under the Proposed Action, grazing management systems which incorporate periodic rest during the critical spring and early summer growing seasons would improve forage plant vigor and reproductive success. One exception would be the small individually fenced areas for which annual spring grazing would take place under this alternative (3,799 acres; less than 1 percent of the ES Area) shown in Table 8-26. The other exception would be an estimated 83,527 acres (15 percent of the ES Area) within the allotments that are discussed individually below.

TABLE 8 - 25

EXPECTED FUTURE PRODUCTION
ATTRIBUTABLE TO RANGE REHABILITATION
AND TO GRAZING MANAGEMENT

ALLOTMENT NAME 1/	PRESENT PRODUCTION (AUMS)	PRODUCTION ATTRIBUTABLE TO RANGE REHABILITATION (AUMS)	PRODUCTION ATTRIBUTABLE TO GRAZING MANAGEMENT SYSTEM (AUMS)	EXPECTED FUTURE PRODUCTION IN 15 YEARS (AUMS)
* BLACK BUTTES	4	4	1	9
* BLACK CANYON	3,362	651	483	4,496
* CANAL	47	43	11	101
* CLOVER CREEK	2,883	624	(-112)	3,395
* COMPOUND	60	0	3	63
COVE CREEK	4	6	2	12
DAVIS MOUNTAIN	4,356	306	577	5,239
* DEMPSEY	1,496	293	397	2,186
* FRICKE	7	6	4	17
GWIN RANCH	74	0	3	77 4/
HASH SPRING	1,213	0	121	1.334 4/
HILL CITY BRANCH	57	12	25	94
* INDIAN	2,799	672	1,162	4.633
KIME	46	19	14	79
* KING HILL	1,900	166	(-47)	2,019
* KINZIE BUTTE	909	377	(-92)	1,194
LAVA	1,002	610	213	1,825
LOWER MAGIC	52	0	14	66 4/
* MACON FLAT	3,524	704	(-352)	3,876
MAGIC	870	10	80	960
NORTH GOODING	5,795	882	(-579)	6,098
NORTH SHOSHONE	11,916	1,021	1,907	14,844
NORTH SLOPE	94	0	0	94 4/
* PICABO	681	42	662 2/	1,385
PIONEER	688	133	295	1,116
POISON CREEK	42	0	3	45 4/
* RATTLESNAKE	1,331	551	224 3/	2,106
RICHFIELD CATTLE	3,103	0	142	3,245 4/
* SCHOOLER CREEK	30	0	3	33
SPUD PATCH	325	35	69	429
SPRING CREEK	96	0	4	100 4/
SPRINGDALE	39	0	3	42 4/
STRUTHERS	171	85	54	310
SWINGING BRIDGE	398	28	32	458
THE PASTURE	72	47	11	130
* TICESKA	498	189	33	720
TIKURA	235	0	0	235 4/
TIMMERMAN EAST	1,850	869	(-16)	2,703
TIMMERMAN WEST	1,289	49	(-83)	1,255
* TRACK	263	37	27	327
"46"	14	12	3	29
* "101"	305	134	108	547
TOTAL	53,900	8,617	5,409	67,926

1/ For the allotments marked with an asterisk, the grazing system for the Maximum Rehabilitation Alternative is not the same as that for the Proposed Action.

2/ The allotment boundaries, pasture boundaries, and grazing system for the Maximum Rehabilitation Alternative are not the same as those for the Proposed Action.

3/ The pasture boundaries and grazing system in the Maximum Rehabilitation Alternative are not the same as those for the Proposed Action.

4/ No Maximum Rehabilitation Alternative has been identified. Data is from the Proposed Action which is considered the minimum acceptable action for Alternative 4.

TABLE 8 - 26

EXPECTED VEGETATION CONDITION IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
I. REST ROTATION (RR)														
A. RR With Two Treatments (RR-2)														
**Rattlesnake Allotment	40	9	0	0	225	17	1,342	129	3,596	358	4,842	606	10,045	1,119
Thorn Creek Pasture														
Preacher Creek Pasture														
TOTAL FOR RR-2	40	9	0	0	225	17	1,342	129	3,596	358	4,842	606	10.045	1,119
B. RR With Three Treatments (RR-3)														
Fricke Allotment	54	14	0	0	0	0	33	3	0	0	0	0	87	17
Hill City Branch Allotment	40	9	280	43	0	0	80	6	287	36	0	0	687	94
Kime Allotment	0	0	280	47	0	0	320	32	0	0	0	0	600	79
Lava Allotment	3,000	570	4,500	640	0	0	10,700	385	9.800	230	0	0	28.000	1.825
**North Gooding Allotment	2,420	659	7,020	1,755	0	0	1,214	118	8,589	950	5,345	934	24,588	4,416
County Line Pasture														
Flat Top Pasture														
Peck Meadow Pasture														
Struthers Allotment	500	125	100	15	0	0	0	0	1,792	170	0	0	2,392	310
Ticeska Allotment	3,455	685	0	0	0	0	436	35	0	0	0	0	3,891	720
TOTAL FOR RR-3	9,469	2,062	12,180	2,500	0	0	12,783	579	20,468	1,386	5,345	934	60,245	7,461
C. RR With Four Treatments (RR-4)														
Pioneer Allotment	2,884	676	0	0	165	14	3,713	426	0	0	0	0	6,762	1,116
Richfield Cattle Allotment	0	0	4,658	1,171	0	0	1,780	227	15,577	1,847	0	0	22,015	3,245
TOTAL FOR RR-4	2,884	676	4,658	1,171	165	14	5,493	653	15,577	1,847	0	0	28,777	4,361
II. MODIFIED REST ROTATION (MRR)														
A. MRR With Three Treatments (MRR-3)														
**Black Canyon Allotment	12,197	1,382	0	0	0	0	14,149	1,125	550	30	218	14	27,114	2,551
Dead Horse Pasture														
Four Mile Pasture														
Open Crossing Pasture														
**Dempsey Allotment	5,477	723	0	0	797	70	4,716	489	240	22	0	0	11,230	1,304
Dry Creek Pasture														
Dead Pasture														
Rim Pasture														
North Shoshone Allotment	12,837	2,824	0	0	0	0	26,594	3,746	45,946	6,863	8,251	1,411	93,628	14,844
TOTAL FOR MRR-3	30,511	4,929	0	0	797	70	45,459	5,360	46,736	6,915	8,469	1,425	131,972	18,699
B. MRR With Four Treatments (MRR-4)														
***Davis Mountain Allotment	4,367	774	765	56	0	0	2,902	125	9,415	561	1,300	126	18,749	1,642
Canal Pasture														
Lower Ferguson Pasture														
Lower Radermacher Pasture														
Onion Patch Pasture														
Timmerman East Allotment	0	0	13,750	1,765	0	0	2,538	139	12,664	799	0	0	28,952	2,703
TOTAL FOR MRR-4	4,367	774	14,515	1,821	0	0	5,440	264	22,079	1,360	1,300	126	47,701	4,345
III. DEFERRED ROTATION (DR)														
A. DR With Two Treatments (DR-2)														
1. DR-2 With Turnout to Seed Ripe Defer Until After Seed Ripe														
Canal Allotment	262	65	100	17	0	0	0	0	149	19	0	0	511	101
**Clover Creek Allotment	0	0	0	0	0	0	3,510	221	20,193	1,445	2,068	172	25,771	1,838
Coyte Hill Pasture														
Monument Gulch Pasture														
Compound Allotment	0	0	0	0	0	0	457	63	0	0	0	0	457	63
Gwin Ranch Allotment	0	0	0	0	0	0	0	0	487	77	0	0	487	77
Lower Magic Allotment	207	50	0	0	0	0	0	0	56	16	0	0	263	66
Spring Creek Allotment	0	0	0	0	0	0	0	0	563	100	0	0	563	100
Spud Patch Allotment	0	0	850	142	0	0	2,044	152	1,000	135	0	0	3,894	429
The Pasture Allotment	360	80	0	0	335	30	223	20	0	0	0	0	918	130
Tikura Allotment	0	0	0	0	0	0	3,643	235	0	0	0	0	3,643	235
"46" Allotment	111	21	0	0	0	0	97	8	0	0	0	0	208	29
Total for 1. DR-2	940	216	950	159	335	30	9,974	699	22,448	1,792	2,068	172	36,715	3,068

TABLE 8-26 Continued

EXPECTED VEGETATION CONDITION IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
2. DR-2 With Turnout to 6/15; Defer Until After 10/16														
**Dempsey	0	0	1,125	171	0	0	1,564	110	3,749	364	2,346	237	8,784	882
High Pasture														
Cedar Pasture														
**North Gooding Allotment	2,000	446	0	0	0		8,068	475	6,331	731	418	30	16,817	1,682
Dog Creek Pasture														
Willows Pasture														
Swinging Bridge Allotment	0	0	270	68	0	0	120	15	200	30	2,349	345	2,939	458
**Timmerman West Allotment	0	0	2,380	324	0	0	1,066	115	3,158	217	4,626	315	11,230	971
Wedgetop Pasture														
Well pasture														
TOTAL FOR 2. DR-2	2,000	446	3,775	563	0	0	10,818	715	13,438	1,342	9,739	927	39,770	3,993
3. DR-2 With Two Treatments Before Seed Ripe														
Black Buttes Allotment	44	9	0	0	0	0	5	0	0	0	0	0	49	9
Picabo Allotment	1.041	260	390	59	0	0	5,296	456	4,080	505	711	105	11,518	1,385
TOTAL FOR 3. DR-2	1,085	269	390	59	0	0	5,301	456	4,080	505	711	105	11,567	1,394
B. **DR With Three Treatm**ents (DR-3)														
1. DR-3 With Two Treatments Before and One After Seed Ripe														
*****Davis Mountain Allotment**	2,198	681	1,720	334	0	0	596	49	13,531	2,060	949	203	18,994	3,327
Deer **Creek Pasture**														
Upper Ferguson Pasture														
Upper Radermacher Pasture														
Magic Allotment	2,024	388	1,821	345	0	0	120	10	1,288	132	799	85	6,052	960
Track Allotment	0	0	1,638	295	0	0	0	0	336	32	0	0	1,974	327
TOTAL FOR 1. **DR-3**	4,222	1,069	5,179	974	0	0	716	59	15,155	2,224	1,748	288	27,020	4,614
2. DR-3 With Three Treatments Before Seed Ripe														
***King Hill Allotment	2,924	230	0	0	0	0	12,006	950	1,331	132	487	37	16,748	1,349
Bellmare Pasture														
Hog Creek Pasture														
Walker Reservoir Pasture														
Macon Flat Allotment (Light fall sheep use every pasture)	4,000	666	3,000	375	0	0	13,450	1,139	18,078	1,650	454	46	38,982	3,876
**Rattlesnake	6,589	767	0	0	0	0	3,647	220	0	0	0	0	10,236	987
East Homestead Pasture														
West Homestead Pasture														
Turkey Butte Pasture														
TOTAL FOR 2. DR-3	13,513	1,663	3,000	375	0	0	29,103	2,309	19,409	1,782	941	83	65,966	6,212
C. Deferred Rotation With Four Treatments (DR-4)														
1. DR-4 With Two Treatments Before and Two After Seed Ripe														
**Clover Creek Allotment	6,643	780	0	0	1,268	91	8,753	686	0	0	0	0	16,664	1,557
Bliss Point Pasture														
Bray Lake Pasture														
Canal Pasture														
White Arrow Spring Pasture														
TOTAL FOR 1. DR-4	6,643	780	0	0	1,268	91	8,753	686	0	0	0	0	16,664	1,557
2. DR-4 With Three Treatments Before and One After Seed Ripe														
Kinzie Butte Allotment	2,605	473	1,055	132	0	0	2,954	330	2,070	259	0	0	8,684	1,194
TOTOAL FOR 2. DR-4	2,605	473	1,055	132	0	0	2,954	330	2,070	259	0	0	7,684	1,194

TABLE 8 - 26 Continued

EXPECTED VEGETATION CONDITION IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
IV. DEFERMENT OF USE (DU)														
A. DU Until Past Peak of Flowering After 6/20 (DUF)														
***Davis Mountain Allotment Long Gulch Pasture	0	0	0	0	0	0	20	3	1,192	247	75	20	1,287	270
North Slope Allotment	0	0	0	0	0	0	32	4	233	32	396	58	661	94
TOTAL FOR DUF	0	0	0	0	0	0	52	7	1,425	279	471	78	1,948	364
B. DU Until Seed Ripe Time After 7/20 (DUS)														
Cove Creek Allotment	42	12	0	0	0	0	12	0	0	0	0	0	54	12
***King Hill Allotment North Pasture	0	0	0	0	0	0	1,634	180	3,320	370	80	10	5,034	560
Schooler Creek	0	0	0	0	0	0	0	0	49	28	9	5	58	33
TOTAL FOR DUS	42	12	0	0	0	0	1,646	180	3,369	398	89	15	5,146	605
C. DU Until Dormant Season After 8/20 (DUD)														
"101" Allotment	2,223	431	0	0	184	20	1,731	96	0	0	0	0	4,138	547
TOTAL FOR DUD	2,223	431	0	0	184	20	1,731	96	0	0	0	0	4,138	547
V. MODIFIED DEFERRED ROTATION (MDR)														
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments with Cattle (MDR-2)														
Hash Spring Allotment	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
TOTAL FOR MDR-2	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
B. MDR With Spring Sheep Trail Use In Two Pastures, Rotating Three Treatments with Cattle (MDR-3)														
**Black CAnyon Allotment City of Rocks Pasture Connet Spring Pasture Mormon Reservoir Pasture	128	19	0	0	0	0	11,630	640	10,869	1,212	814	74	23,441	1,945
TOTAL FOR MDR-3	128	19	0	0	0	0	11,630	640	10,869	1,212	814	74	23,441	1,945
C. MDR With Rotation of Use Periods In Five Pastures (MDR-5)														
Indian Allotment	10,610	2,132	1,350	338	0	0	8,442	573	10,867	986	4,079	604	35,348	4,633
TOTAL FOR MDR-5	10,610	2,132	1,350	338	0	0	8,442	573	10,867	986	4,079	604	35,348	4,633
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)														
***King Hill Allotment South Pasture	0	0	0	0	0	0	2,692	81	538	16	356	13	3,586	110
Poison Creek Allotment	0	0	0	0	0	0	269	45	0	0	0	0	269	45
Springdale Allotment	18	14	0	0	0	0	0	0	292	28	0	0	310	42
**Timmerman West Allotment Mahoney Flat Pasture	0	0	0	0	0	0	0	0	0	0	3,220	284	3,220	284
TOTAL FOR ASG	18	14	0	0	0	0	2,961	126	830	44	3,576	297	7,385	481
TOTAL FOR ALL GRAZING SYSTEMS Acres	91,300		47,092		2,974		164,928		214,276		47,708		568,278	
AUMs		15,974		8,102		242		13,945		23,116		6,547		67,926

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***), that allotment has three distinct types of grazing systems.

Specific Allotment Impacts. Seven allotments would have grazing systems (on the entire allotment or portions thereof) that would adversely affect a wide variety of vegetation, although the impact would be especially pronounced for riparian zones. Two of these, Davis Mountain and Timmerman East, call for increases in livestock stocking rates of 20 percent and 43 percent, respectively. The other five call for decreased stocking rates as follows: Clover Creek Allotment, 46 percent; King Hill, 53 percent; Kinzie Butte, 32 percent; Macon Flat, 28 percent; and Rattlesnake, 70 percent. Even with the substantial downward adjustments, the forage plants on grazed areas would not be allowed sufficient rest during critical growing periods. The impacts for each of the seven allotments are discussed below.

Clover Creek Allotment. The yearly spring use called for by the four-treatment deferred-rotation system on 16,664 acres would not provide sufficient growing season rest to restore plant vigor, seed production, and litter accumulation on approximately one-half of the area (8,300 acres).

Davis Mountain Allotment. The three-treatment deferred-rotation grazing system for the upper area (18,994 acres, 49 percent of the allotment) would not provide sufficient rest during the critical growing season because two pastures would be grazed during late spring and early summer. One pasture would be rested until early fall then grazed. The single growing season of rest provided would not be sufficient to restore plant vigor, seed production, and litter accumulation following two years of spring grazing on 13,475 acres of suitable public land (approximately 35 percent of the allotment).

King Hill Allotment. A three-treatment deferred-rotation grazing system is called for on 16,748 acres and annual spring grazing is called for on 3,586 acres (20,334 acres, 80 percent of the allotment). Neither grazing system would provide enough rest from growing season grazing to restore plant vigor and to provide for seed production and litter accumulation. The vegetation on areas easily accessible to cattle, estimated at 9,900 acres (39 percent of the allotment) would be adversely affected.

Kinzie Butte Allotment. The four-treatment deferred-rotation grazing system on the entire allotment (8,684 acres) would not provide sufficient growing season rest for adequate restoration of plant vigor, seed production, and litter accumulation. Vegetation on an estimated 5,900 acres (68 percent of the allotment) would be adversely affected.

Macon Flat Allotment. The three-treatment deferred-rotation grazing system calls for all three pastures to be grazed during the most critical spring growing season and then grazed again during the fall. This would not provide sufficient growing season rest to restore vigor, restore seed production, and allow litter accumulation. The vegetation on areas easily accessible to livestock, estimated at 14,000 acres (36 percent of the 38,982 acres of public land in the allotment), would be adversely affected.

Rattlesnake Allotment. A three-treatment deferred-rotation grazing system is called for on 10,236 acres (50 percent of the allotment). This system would not provide sufficient spring rest to restore vigor, produce seed, and accumulate litter on an estimated 3,000 acres where access is easy for cattle. The vegetation on 15 percent of the allotment would be adversely affected.

Timmerman East Allotment. The modified four-treatment rest-rotation grazing system calls for two pastures to be grazed on three consecutive years during the critical growing period. The pasture rested from cattle use would be grazed by sheep during both the critical spring season and during the fall and would, therefore, never receive rest from grazing. Two other pastures would be grazed on consecutive years during the critical growing period. But one pasture would recieve complete rest from grazing every fourth year. Vigor, seed production, and litter accumulation would be much less than normal following either three or four years of grazing during critical growing periods in all four pastures. Vegetation would be adversely affected on the entire 28,952 acres of public land in the allotment.

Unallotted Areas. The same vegetation response on 70 unallotted areas, totaling 9,518 acres, would be expected under this alternative as under the Proposed Action. Vegetation condition would improve (upward trend) on the 49 tracts to be protected from livestock grazing and also on the 14 tracts to be eventually incorporated into existing allotments. The 4 tracts, totaling 297 acres, to be used as stock driveways and holding fields would continue to have poor or highly disturbed vegetation conditions.

Three tracts, specifically designated for use by wintering deer (Map 1-2, reference numbers 58, 59, and 60), would be included in the Picabo Allotment under this alternative. The three tracts, which include 3,648 acres of public land, would improve rapidly in plant vigor, seed production, and litter accumulation in fifteen years (Picabo Allotment, Table 8-23). Cattle would not graze more than 17 to 20 percent of the total public land area. Cattle would concentrate on places near water, on nearly level or slightly sloping places, and on other easily accessible areas. Heavy cattle use areas would not make up more than 5 percent of the public land.

The expected vegetation trend would be upward on the three tracts because, with the initial stocking rate called for in

Alternative 4, most of the land area would not be grazed by cattle. Because deer normally consume a high percentage of shrubs in their winter diet, and because there is currently an overabundance of shrubs on the poor and fair condition portions of these tracts, the vegetation composition would improve toward the potential natural vegetation.

Vegetation Condition. The overall vegetation condition (ES Area-wide) would improve over the next fifteen years under decreased stocking and more intensive grazing management on the allotments. The expected vegetation condition and production (expressed in AUMs) is shown in Table 8-26 for each of four condition categories and two man-caused categories (seeding and brush control) by grazing systems. These predictions are best professional estimations based on applicable soils data, field samples, and previously observed responses of vegetation. Table 8-27 is a summary comparison of existing vegetation condition and the expected condition in fifteen years under Alternative 4. The number of seedings and brush control acres would nearly double with this alternative, mainly as a result of over 87,000 acres being treated. A loss of productivity would be expected on those land treatments lying within allotments having inadequate rest from green period grazing.

The amount of public land in the ES Area in highly distrubed or poor condition would change from the existing 48 percent to 30 percent of the total under this alternative (42 percent with the Proposed Action). Many of the acres currently in low condition categories would be treated. Public land in fair and good condition presently makes up 40 percent of the total; with this alternative this figure would increase to 46 percent (47 percent with Proposed Action).

Vegetation Trend. Three classes of vegetation trend are shown in Table 8-28. The acres within each trend class are displayed by grazing system. The amount of public land in downward trend would be expected to change from 22 to 6 percent (4 percent with the Proposed Action); the amount in upward trend would change from 2 to 34 percent (67 percent with the Proposed Action); and the amount in static trend would change from 76 to 60 percent (29 percent with the Proposed Action). The reason for a lower percentage of public land in upward trend and a higher percentage in static trend than under the Proposed Action is that under this alternative more grazing systems are proposed which do not provide adequate rest from grazing during the critical spring and early summer growing periods.

Summary. In summary, under Alternative 4, forage plant vigor, seed production, and litter accumulation would improve on 85 percent of the ES Area. On 15 percent, inadequate rest from stressful defoloation (grazing) during the critical growing season

TABLE 8 - 27

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION, EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION, AND EXPECTED CONDITION IN 15 YEARS UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION - PROPOSED ACTION			FUTURE CONDITION - ALTERNATIVE 4		
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM EXISTING 2/ (PERCENT)	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM PROPOSED ACTION 3/ (PERCENT)
Seeding	36,878	6.5%	44,022	7.8%	19.4%	91,300	16.1%	107.4%
Brush Control	30,476	5.4	15,157	2.7	-50.3	47,092	8.3	210.7
Highly Disturbed	38,379	6.8	10,755	1.9	-72.0	2,974	0.5	- 72.3
Poor	234,931	41.6	226,672	40.1	- 3.5	164,928 4/	29.0	- 27.2
Fair	186,157	33.0	223,156	39.5	19.9	214,276 5/	37.7	- 4.0
Good	37,809	6.7	44,868	7.9	18.7	47,708 6/	8.4	6.3

1/ May not add to 100 percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment under the Proposed Action divided by total acres in the present environment for each vegetation condition category.

3/ The degree of change represents total acres in the expected future environment under this alternative divided by total acres under the expected future environment under the Proposed Action for each vegetation condition category.

4/ Includes 1,697 acres of the 3,648 acres added to the Picabo Allotment by inclusion of proposed unallotted areas with Map 1-1 numbers of 58, 59, 60.

5/ Includes 1,300 acres of the 3,648 acres added.

6/ Includes 651 acres of the 3,648 acres added.

TABLE 8 - 28

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
I. REST ROTATION (RR)				
A. RR With Two Treatments (RR-2)				
**Rattlesnake Allotment	10.045	10,045	---	---
Thorn Creek Pasture				
Preacher Creek Pasture				
TOTAL FOR RR-2	10,045	10,045	000	000
B. RR With Three Treatments (RR-3)				
Fricke Allotment	87	87	---	---
Hill City Branch Allotment	687	367	---	320
Kime Allotment	600	320	---	280
Lava Allotment	28,000	8,501	---	19,499
**North Gooding Allotment	24,588	---	2,459	22,129
County Line Pasture				
Flat Top Pasture				
Peck Meadow Pasture				
Struthers Allotment	2,392	2,392	---	---
Ticeska Allotment	3,891	3,891	---	---
TOTAL FOR RR-3	60,245	15,558	2,459	42,228
C. RR With Four Treatments (RR-4)				
Pioneer Allotment	6,762	3,878	---	2,884
Richfield Cattle Allotment	22,015	10,885	---	11,130
TOTAL FOR RR-4	28,777	14,763	000	14,014
II. MODIFIED REST ROTATION (MRR)				
A. MRR With Three Treatments (MRR-3)				
**Black Canyon Allotment	27,114	27,114	---	---
Dead Horse Pasture				
Four Mile Pasture				
Open Crossing Pasture				
**Dempsey Allotment	11,230	11,230	---	---
Dry Creek Pasture				
Dead Pasture				
Rim Pasture				
North Shoshone Allotment	93,628	---	---	93,628
TOTAL FOR MRR-3	131,972	38,344	000	93,628
B. MRR With Four Treatments (MRR-4)				
***Davis Mountain Allotment	18,749	18,749	---	---
Canal Pasture				
Lower Ferguson Pasture				
Lower Radermacher Pasture				
Onion Patch Pasture				
Timmerman East Allotment	28,952	---	7,101	21,851
TOTAL FOR MRR-4	47,701	18,749	7,101	21,851

TABLE 8-28 Continued

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
III. DEFERRED ROTATION (DR)				
A. DR With Two Treatments (DR-2)				
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe				
Canal Allotment	511	---	---	511
**Clover Creek Allotment	25,771	---	---	25,771
Coyote Hill Pasture				
Monument Gulch Pasture				
Compound Allotment	457	---	---	457
Gwin Ranch Allotment	487	487	---	---
Lower Magic Allotment	263	---	---	263
Spring Creek Allotment	563	---	---	563
Spud Patch Allotment	3,894	300	1,220	2,374
The Pasture Allotment	918	918	---	---
Tikura Allotment	3,643	3,643	---	---
"46" Allotment	208	97	---	111
TOTAL FOR 1. DR-2	36,715	5,445	1,220	30,050
2. DR-2 With Turnout to 6/15; Defer Until After 10/16				
**Dempsey Allotment	8,784	8,784	---	---
High Pasture				
Cedar Pasture				
**North Gooding Allotment	16,817	---	1,683	15,134
Dog Creek Pasture				
Willows Pasture				
Swinging Bridge Allotment	2,939	580	---	2,359
**Timmerman West Allotment	11,230	---	1,120	10,110
Wedgetop Pasture				
Well Pasture				
TOTAL FOR 2. DR-2	39,770	9,364	2,803	27,603
3. DR-2 With Two Treatments; Before Seed Ripe				
Black Buttes Allotment	49	---	---	49
Picabo Allotment	11,518	10,087	---	1,431
TOTAL FOR 3. DR-2	11,567	10,087	000	1,480
B. DR With Three Treatments (DR-3)				
1. DR-3 With Two Treatments Before and One after Seed Ripe				
***Davis Mountain Allotment	18,994	---	1,376	17,618
Deer Creek Pasture				
Upper Ferguson Pasture				
Upper Radermacher Pasture				
Magic Allotment	6,052	991	---	5,061
Track Allotment	1,974	336	---	1,638
TOTAL FOR 1. DR-3	27,020	1,327	1,376	24,317

TABLE 8-28 Continued

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
2. DR-3 With Three Treatments Before Seed Ripe				
***King Hill Allotment	16,748	2,045	3,871	10,832
Bellmare Pasture				
Hog Creek Pasture				
Walker Reservoir Pasture				
Macon Flat Allotment (Light fall sheep use, every pasture)	38,982	---	9,222	29,760
**Rattlesnake	10,236	---	---	10,236
East Homestead Pasture				
West Homestead Pasture				
Turkey Butte Pasture				
TOTAL FOR 2. DR-3	65,966	2,045	13,093	50,828
C. Deferred Rotation With Four Treatments (DR-4)				
1. DR-4 With Two Treatments Before And Two After Seed Ripe				
**Clover Creek Allotment	16,664	---	2,220	14,444
Bliss Point Pasture				
Bray Lake Pasture				
Canal Pasture				
White Arrow Spring Pasture				
TOTAL FOR 1. DR-4	16,664	000	2,220	14,444
2. DR-4 With Three Treatments Before And One After Seed Ripe				
Kinzie Butte Allotment	8,684	2,172	2,172	4,340
TOTAL FOR 2. DR-4	8,684	2,172	2,172	4,340
IV. DEFERMENT OF USE (DU)				
A. DU Until Past Peak of Flowering; After 6/20 (DUF)				
***Davis Mountain Allotment	1,287	---	---	1,287
Long Gulch Pasture				
North Slope Allotment	661	---	---	661
TOTAL FOR DUF	1,948	000	000	1,948
B. DU Until Seed Ripe Time; After 7/20 (DUS)				
Cove Creek Allotment	54	54	---	---
***King Hill Allotment	5,034	4,148	---	886
North Pasture				
Schooler Creek Allotment	58	58	---	---
TOTAL FOR DUS	5,146	4,260	000	886
C. DU Until Dormant Season; After 8/20 (DUD)				
"101" Allotment	4,138	1,915	---	2,223
TOTAL FOR DUD	4,138	1,915	000	2,223

TABLE 8-28 Continued

EXPECTED VEGETATION TREND IN 15 YEARS UNDER ALTERNATIVE 4, MAXIMUM REHABILITATION

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
V. MODIFIED DEFERRED ROTATION (MDR)				
A. MDR With Spring Sheep Use in Both Pastures Rotation Two Treatments with Cattle (MDR-2)				
Hash Spring Allotment	5,746	1,430	---	4,316
TOTAL FOR MDR-2	5,746	1,430	000	4,316
B. MDR With Spring Sheep Trail Use in Two Pastures, Rotating Three Treatments with Cattle (MDR-3)				
**Black Canyon Allotment	23,441	23,441	---	---
City of Rocks Pasture				
Connet Spring Pasture				
Mormon Reservoir Pasture				
TOTAL FOR MDR-3	23,441	23,441	000	000
C. MDR With Rotation of Use Periods In Five Pastures (MDR-5)				
Indian Allotment	35,348	35,348	---	---
TOTAL FOR MDR-5	35,348	35,348	000	000
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)				
***King Hill Allotment	3,586	---	---	3,586
South Pasture				
Poison Creek Allotment	269	---	---	269
Springdale Allotment	310	---	---	310
**Timmerman West Allotment	3,220	---	320	2,900
Mahoney Flat Pasture				
TOTAL FOR ASG	7,385	000	320	7,065
TOTAL FOR ALL GRAZING SYSTEMS	568,278	194,293	32,764	341,221

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***), that allotment has three distinct types of grazing systems.

would hinder improvement and cause adverse effects on the vegetation. Overall average utilization of forage species would decrease from 71 percent to 49 percent. Litter accumulation for soil protection would increase by 14,630,400 pounds the first year and would increase annually as vigor and production improved.

Existing problems of heavy utilization of yearly forage production, grazing during the critical green period, poor livestock distribution and repeated grazing of the same area during the growing season would be mostly resolved. Vegetation trend would be upward on 34 percent of the ES Area after 15 years. It would become static on 60 percent of the area. Only about 6 percent of the area would be in a downward trend, primarily resulting from cattle remaining in favored grazing areas in the spring on seven allotments. Most of the specific objectives of the Proposed Action would be met or partially met. It would not be possible to meet the objectives on one allotment, comprising 8 percent of the public land in the ES Area.

Impacts on Terrestrial Wildlife

General Impacts. The general impacts that would occur under this alternative as a result of forage allocation, grazing systems, and seasons of use would be very similar to those identified for the Proposed Action (see Chapter 3); therefore; no additional impact discussion will be presented here concerning these actions.

The major difference between this alternative and the Proposed Action is the magnitude of the proposed land treatment projects. Whereas the Proposed Action identified approximately 5,200 acres for spraying and burning, this alternative identifies approximately 81,000 acres for plowing, spraying, and burning. Table 8-19 gives a breakdown by allotment of the proposed projects and their acreages.

The proposed projects would be constrained by Management Framework Plan (MFP) decisions that would mitigate the impacts of this alternative. Consequently, the projects would not be expected to adversely impact the important species to any significant degree. However, the small mammals and birds, which depend upon the brush and its associated understory vegetation for food and cover, would be adversely affected.

Species such as sage sparrows, jackrabbits, coyotes, etc., that are directly associated with sagebrush would be adversely impacted by the reduction of brush. Spraying, burning, and plowing would reduce nesting cover, escape cover, and food. The reduced availability of brush would reduce the quantity of nesting habitat, increase the animals' vulnerability to predators, and eventually lead to the elimination of the species within the treated areas.

Short-term impacts on species not directly associated with brush, such as summering sage grouse and big game animals, would be adverse; however, as the grasses and forbs become reestablished, the additional forage would prove beneficial.

Impacts on Big Game.

Mule Deer. Constraints within the MFP provide for protection of mule deer winter ranges; therefore, no land treatment projects have been proposed that would adversely impact these ranges. Conversely, the projects that have been proposed would benefit wintering deer on a long-term basis by providing additional grasses and forbs. These plants would be used primarily in the spring; but during years having sufficient fall moisture to produce some fall green-up, this high-quality forage would be available throughout the winter months.

The land treatment projects proposed for deer summer habitat areas would be designed to maintain adequate brush cover. The projects would enhance the habitat for deer by increasing the amount of available summer forage.

A significant difference in the proposed allocation of forage between this alternative and the proposed action occurs within the Picabo Allotment. This alternative proposed that all AUMs for deer within the Picabo Winter Range be assigned to public lands, whereas the Proposed Action would assign 322 AUMs to private land. This alternative would ensure that adequate AUMs for deer would be available on public land despite any actions by the private landowner.

Elk. Elk populations would be expected to respond favorably to the proposed land treatments. No significant adverse impacts would occur to elk habitat, and the increased grasses and forbs resulting from the land treatment projects would, over the long term, provide additional food.

Antelope. MFP guidelines constrain the removal of brush on winter and fawning areas; consequently, the land treatment projects would be designed in a manner that would not adversely impact antelope habitat. Adequate brush for fawning, fawn cover, and winter forage would remain available, and the treated areas would provide an improved source of spring and summer forage. Antelope populations would be expected to increase because of the improved habitat conditions.

Impacts on Small Mammals. Small mammal populations, which have small localized home ranges, would be adversely impacted by the land treatment projects. The reduction of brush and/or other vegetation would reduce, at least temporarily, the quantity of their food and cover. This impact would result in decreased animal condition, reduced reproduction, reduced reproductive success, and increased availability to predators, thus leading to lower populations. Although some animals would have the capability to move to adjacent untreated areas, others would not, and their populations would eventually be eliminated.

Land treatments such as burning, plowing, and spraying would adversely impact small mammals. However, the impacts could be small and/or insignificant if projects avoided treating large continuous habitat areas. Treatment areas less than 100 acres in size and having adjacent undisturbed brush would provide sources of food and cover for animals having small home ranges. If the areas were irregularly shaped, they would maximize the "edge effect."

Impact on Birds.

Sage Grouse. The proposed land treatment projects would not be expected to adversely impact known sage grouse habitat areas. Adverse impacts could result from treatment of important grouse areas that have not been identified; however, because each project would have to undergo an environmental assessment prior to implementation, any significant adverse impacts would be mitigated at that time.

The primary beneficial impact resulting from the land treatment projects would be the increased availabiity of succulent summer vegetation. The increased forage would improve the brood rearing success and could lead to increased grouse populations.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves. The impacts resulting from this alternative would be similar to those described for small mammals. Hungarian partridge, quail, and doves all utilize sagebrush for food and cover. If large continuous blocks were treated, the adverse impacts would be significant. However, if small irregularly shaped blocks were treated, the impacts could prove beneficial. The birds are mobile, and if there is adequate nesting habitat adjacent to the treated areas, the habitat conditions would be improved by the increased availability of forbs and grasses.

Chukars and pheasants would not be significantly affected by the land treatment projects.

Waterfowl. The impacts to waterfowl would be the same as described for the Proposed Action (see Chapter 3).

Impacts on Threatened, Endangered, and Sensitive Wildlife.

This alternative would not impact the bald eagle nor would it significantly impact six of the seven sensitive species which inhabit the ES Area. Burrowing owls would be impacted by both the plowing and seeding processes through the destruction of nest sites. However, a thorough inventory undertaken during the nesting period could virtually eliminate the impact by identifying the sites so they could be avoided during land treatment.

Summary. With one exception the cumulative impacts occurring from Alternative 4, Maximum Rehabilitation, would be essentially the same as for the Proposed Action. Big game and upland game bird populations would be the same as those described under the Proposed Action.

Small mammal and bird populations could decline as a reslt of the extensive land treatment projects. No attempt has been made to quantify the population decline because of the many factors that could affect the population numbers. However, if the treatment areas are small and irregularly shaped the impacts would not be expected to be significant.

Impacts on Fisheries

The impacts resulting from this alternative are the same as those described for the Proposed Action (see Chapter 3).

Impacts on Cultural Resources

Under this alternative there could be severe impacts to cultural resources. Especially adverse impacts would occur in those areas to be treated with plowing or discing and seeding, because these treatments cause significant surface disturbance and could be instrumental in displacing artifacts and compromising the stratigraphic integrity of cultural resource sites.

Three sites, which have been identified as possibly eligible for National Register nomination, lie within planned treatment areas, but depending on the specific portions of the areas which would receive treatment(s), these sites could be avoided.

In the short term, impacts to cultural resource sites under this alternative would be greater than at present or under the Proposed Aaction. Undiscovered sites would be affected by surface-disturbing treatments, and erosion would be a problem in areas where brush were removed.

In the long term, impacts from the treatments *per se* would be negligible, but the increased potential concentration areas for livestock would increase the likelihood of cultural resources being impacted by trampling and its concomitant erosion.

Some beneficial impacts could be expected in the short term. These would relate primarily to the expected increase in cultural resource baseline data that would be generated by on-the-ground intensive inventories undertaken in the proposed treatment areas. These inventories would allow for the recordation of presently undiscovered sites and would also provide the opportunity to avoid or otherwise mitigate impacts to those sites during the treatment process.

Impacts on Visual Resources

The grazing systems under this alternative would be less effective than those under the Proposed Action in improving vegetation conditions. However, grazing alone would not significantly impact the visual resources. Likewise, construction of facilities would not have a significant impact. On the other hand, land treatments such as brush control and seeding could have a significant impact on visual resources, especially during the short term. Prescribed burning, herbicide spraying, plowing, and seeding would initially create obvious contrasts in the landscape. After vegetation becomes reestablished, the contrasts would decrease. In the long term the vegetation would be improved, resulting in more variety and color in the landscape.

Impacts on Recreation Resources

The impacts from this alternative on recreation resources would be very similar to those described for the Proposed Action (see Chapter 3). The stocking rates for some allotments would be greater than for the Proposed Action but would be generally less than they are presently. Therefore, conflicts with grazing use would be mostly related to the land treatments under this alternative. During the short term, prescribed burning, herbicide spraying, plowing, and seeding could disrupt recreational use in localized areas. In the long term, such projects could increase hunting opportunities and enhance enjoyment of sightseeing, hiking, and camping.

Additional fencing under this alternative could cause minor inconveniences relating to public access. However, assuming this alternative would be generally acceptable to local landowners, road access across private property would be less likely to be restricted than under the Proposed Action.

Impacts on Wilderness

The wilderness inventory and analysis described in Chapter 2 would continue unaffected by this alternative. No wilderness areas would be lost or impaired, because if areas having wilderness characteristics were identified, any conflicting activities would be restricted until Congress acts on designation of the areas.

Impacts on Livestock Grazing

Alternative 4 would require a downward adjustment from 58,731 AUMs annual grazing use (1972-1976 average) to 40,443 AUMs, a 31 percent reduction. This compares to an initial stocking rate of 38,138 AUMs, a 35 percent reduction, with the Proposed Action.

Even though the stocking rate would be greater with this alternative than with the Proposed Action, forage available for livestock would decrease by 18,288 AUMs. This would adversely affect livestock grazing in both the short and long term. This alternative has socioeconomic implications, which are addressed in "Impacts on Socioeconomic Conditions."

The greatest downward adjustment from average licensed use (1972-1976) with this alternative is 88 percent (77 percent with Proposed Action) while the greatest proposed upward adjustment from licensed use is 320 percent (same as Proposed Action).

No adjustment is proposed for the Hash Spring Allotment which comprises approximately 1 percent of the ES Area.

Thirty allotments comprising over 72 percent of the ES Area, would receive some degree of reduction from the five-year average licensed use. Eight allotments, making up approximately 3 percent of the ES Area would require a reduction of less than 30 percent (seven allotments, 3 percent with the Proposed Action). Twelve allotments, making up approximately 49 percent of the ES Area, would require a reduction of 31-50 percent (thirteen allotments, 50 percent with the Proposed Action). Nine allotments, making up approximately 19 percent of the ES Area, would require a reduction of 51-77 percent (ten allotments, 20 percent with the Proposed Action). One allotment, Picabo, making up only about 1 percent of the ES Area would require a reduction of 88 percent (57 percent with the Proposed Action). Ninety-three of the 112 livestock operators would have downward adjustments (see Table 8-30 in "Impacts on Socioeconomics").

Under this alternative, ten allotments, comprising nearly 27 percent of the ES Area, could be stocked heavier than they were during the average licensed use period (1972-1976). Of these, five allotments, making up approximately 17 percent of the ES Area, could have increased stocking rates of between 2 and 50 percent. Five allotments, making up approximately 10 percent of the ES Area, could have increased stocking rates of greater than 51 percent.

Nineteen of the 112 livestock operators would not be adversely affected by the adjustments in the level of livestock grazing based on their average licensed use. These operators would be allowed the use of more livestock forage under the maximum rehabilitation alternative than was used over the past several years. The operators and the additional forage they would be allowed are displayed in Table 8-30 in the "Impacts on Socioeconomics" section.

Increased forage production would be expected over the next 15 years if this alternative is implemented (see "Impacts on Vegetation"). The increase, estimated to be 14,026 AUMs (expected total future production, 67,926 AUMs, minus total present production, 53,900 AUMs) could be allocated to livestock at the end of fifteen years providing present big game numbers remain at or near present levels.

Even assuming no future production would be needed to satisfy increased big game forage demand, the 14,026 AUMs gained over the long term under Alternative 4 would not compensate for the immediate short-term reduction of 18,288 AUMs. The long-term impact would, therefore, be a net deficit of at least 4,262 AUMs on the proposed allotments.

The reduced stocking rates under this alternative would result in the same benefits as the Proposed Action (see Chapter 3, "Impacts on Livestock Grazing").

Alternative 4, like the Proposed Action, calls for grazing systems that would require livestock to be moved regularly, more often, and in some cases, longer distances than presently. This would compel livestock to adjust to new terrain, water sources, and salt and/or feed supplement locations. The adjustment process may have short-term effects on livestock performance, causing temporary reductions in weight gains. Over the long term, livestock performance would be expected to improve as vegetation condition improves and livestock become accustomed to being moved regularly.

The grazing systems would require more time and effort than present grazing. Changing the mode of operation, however, would not be a long-term adverse impact to the ES Area because operators would adjust to the new situation over a period of time.

Several of the proposed grazing systems would be on new allotments formed by combining several existing allotments (Map 1-1). Combining existing allotments would significantly alter the present pattern of use, resulting in both adverse and beneficial affects.

On the adverse side, most allotment combinations would require more work and cooperation from each livestock operator. If personal conflicts arose, the working of livestock could degenerate from a group to an individual effort and livestock management would suffer. The impact from interpersonal conflicts cannot be quantified.

This alternative calls for annual spring grazing on six small allotments. These include Black Buttes, "46", Fricke, Poison Creek, Springdale, and Timmerman West (Mahoney Flat Pasture only), and comprise 4,143 acres of public land (less than 1 percent of the ES Area). This alternative also calls for deferment of grazing until a certain prescribed date on four small allotments. These are Cove Creek, North Slope, "101", and Schooler Creek, and comprise 4,911 acres of public land (less than 1 percent of the ES Area). The proposal would have little impact on existing livestock operations in these allotments except for those resulting from the proposed adjustments in the level of allowable grazing use.

Under the rotational grazing systems shown in Table 3-7 for allotments having the same system as the Proposed Action, and in Table 8-22 for allotments different than the Proposed Action, the resting of portions of a grazing allotment would concentrate cattle on the nonrested portions.

Water sources would be more heavily used, sometimes creating water shortages. This would not usually be a problem with either surface waters such as streams, ponds, and reservoirs or with high-volume springs. However, temporary water shortages at low-volume springs and favored troughs along pipelines are presently common during hot summer days. Because an entire allotment would not be open to livestock, water availability in individual pastures would be crucial and would cause livestock operators to spend more time ensuring its availability. This would constitute an immediate and long-term impact.

When concentrated in a smaller area, cattle may attempt to escape through newly constructed pasture fences until they become used to them. This is a short-term impact and would be expected to become negligible within a year or two after implementation of the grazing system.

Concentrated in use pastures during the first few years of a grazing cycle, livestock would graze less palatable forage than presently, where an entire allotment might be available for grazing. Through continual search for the most palatable forage, livestock could experience temporary weight loss. As forage production and quality improves, this impact would become negligible.

Concentration of livestock in use pastures could also cause some loss of livestock from poisonous plants for the first few years of a grazing cycle. This would be an adverse short-term impact until vegetation condition improves as a result of the proposed grazing systems.

Beneficial impacts resulting from livestock concentration in use pastures would include improved vegetation vigor and reproduction on an allotment-wide basis. There would be a more uniform pattern of forage utilization. Overall, the concentration of livestock into use pastures would be a long-term beneficial impact on livestock grazing, resulting from increased available forage.

Some grazing systems would require later turnout dates than presently. This would require holding livestock on private pastures or in feedlots later in the spring. Although the grazing season would be extended into the fall in most instances, this could result in a long-term adverse impact from increased feeding costs. In some cases, general animal health would temporarily suffer from remaining in feedlots or pastures longer in the spring, because warmer temperatures increase bacterial and fungal activity and lead to livestock disease problems.

The impacts on livestock grazing from the construction and use of the range improvements shown in Tables 8-19 and 8-21, and on Map 8-1, would be generally beneficial. More watering places and improved water dependability would result from the proposed water developments. Management facilities, including fences, cattleguards, and stock trails would generally make livestock management easier. Fence maintenance represents an additional expense in time and money for livestock operators; however, cattleguards would facilitate the movement of ranch vehicles in some allotments without having to open and close gates. They would also reduce the incidence of gates being left open and the resulting scattering of livestock. Stock trails would improve accessibility to areas not now easily reached for grazing.

The short-term effect of the proposed land treatments shown on Table 8-21 would be adverse because the areas would have to be protected from grazing until the desired vegetation became established. This would cause further cutbacks in grazing use for a minimum of two years. The long-term effect for livestock grazing would be greater forage availability and improved dependability.

Alternative 4, like the Proposed Action, calls for 70 tracts of public land totaling 9,518 acres to be unallotted for livestock grazing (Table 1-3). On the adverse side, 52 tracts totaling 8,596 acres would be set aside for other uses such as wildlife, recreation, or cultural resource protection. This would result in an immediate and long-term loss of 848 AUMs. On the beneficial side, four tracts totaling 297 acres would be used for stock trails, stock driveways, and livestock holding fields. Fourteen tracts totaling 625 acres would be incorporated into proposed allotments sometime within the fifteen-year life of the proposal. Inclusion of the tracts would make an additional 88 AUMs available for livestock grazing.

In summary, forage quality and availability on a per unit basis would improve. Forage from land treatments would provide more dependable yearly growth. The required downward adjustment on 30 allotments (comprising nearly three-fourths of the ES Area) would be an adverse long-term impact because 18,288 AUMs grazing use would be lost from proposed allotments, and 848 AUMs would be lost from proposed unallotted areas. Because only 14,114 AUMs would be expected from increased production on the proposed allotments (14,026 AUMs) and addition of fourteen unallotted areas to the allotments (88 AUMs), a net long-term deficit of 4,174 AUMs would remain after fifteen years.

This long-term adverse impact would affect 93 of the 1,072 ranches reporting during the 1974 Census of Agriculture (see Table 2-35 in the "Socioeconomic Conditions" section). Thus, less than 9 percent of all livestock producers would be affected. Since the five-year (1972-1976) average use of 58,731 AUMs (Table 1-5) represents only about 2.2 percent of the livestock forage requirement of the five-county area (Chapter 2 "Livestock Grazing"), the proposed reduction would not have serious impacts on the total livestock industry. If public land AUMs were decreased by 18,288, it would represent 0.69 percent of the total AUM requirement for the livestock industry in the five-county area.

Impacts on Socioeconomic Conditions

Population. Population trends and levels would not differ significantly from those identified in Chapter 2, "Socioeconomic Conditions."

Employment. The livestock industry would realize a direct loss of ten jobs as a result of implementing this alternative. An additional three jobs would be lost to the five-county economy as a secondary impact of this alternative. The three jobs lost would be spread through three different sectors of the economy. These impacts are displayed in Table 8-29.

Income. Under this alternative the initial stocking rate would be 40,443 AUMs. This stocking level would represent a reduction from active qualified demand of 42,677 AUMs and from five-year average licensed use of 18,288 AUMs. Individual adjustments from qualified demand would range from a loss of 4,327 AUMs to a gain of 132 AUMs. Individual adjustments from average use would range from a loss of 2,529 AUMs to a gain of 496 AUMs. Table 8-30 lists the operators in the ES Area and their active qualifications and average actual use. It also shows the adjustments in AUMs for each operator and percentage changes from both active and average use under this alternative. To compensate for reductions in grazing on public land, livestock operators would have to reduce herd sizes, buy or raise additional hay, convert irrigation pastureland, and/or buy or rent additional irrigated or dryland pasture.

The impact of this adjustment of AUMs would be a reduction in livestock and livestock-related income in the five-county economic study area. The initial reduction in income would be $144,658. The rancher with the largest loss from average use (2,529 AUMs) would lose $20,004 in income. The largest gain (496 AUMs) in income would be $3,923. The average loss (188 AUMs) would be $1,487 of income.

These reductions in income would create secondary impacts throughout the study area. An additional loss of income of $36,060 would occur as a result of the initial loss of $145,000 in the livestock industry. Income lost by industry is shown in Table 8-31. These would be annual losses of income. The total loss of income, both primary ($145,000 to the livestock industry) and secondary ($36,060 through the entire economy) would total $181,060 annually for the study area. This compares with a total 1974 five-county income of $172,213,000 (see Chapter 2, "Socioeconomic Conditions"). Thus, as a result of implementing this alternative, the total loss of income in the study area would be approximately 0.1 percent of the total income generated. Total income losses in the livestock industry ($145,000 primary plus $5,260 secondary) would be $150,260 annually. This compares to the total 1974 five-

TABLE 8-29

SECONDARY EMPLOYMENT LOSSES
ALTERNATIVE NO. 4: MAXIMUM REHABILITATION

INDUSTRY	NUMBER OF JOBS
AGRICULTURE	
Livestock (Except Dairy-Poultry)	0
Other	0
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	1
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	1
TRANSPORTATION AND COMMUNICATION	0
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	1
FINANCE, INSURANCE, REAL ESTATE	0
SERVICES	0
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	3

Source: Bureau of Land Management, Idaho State Office,
Dynamic Regional Analysis Model (DYRAM),
November 1978

TABLE 8-30

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY
FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA
UNDER ALTERNATIVE 4

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS				DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
				FROM ACTIVE GRAZING QUALIFICATIONS		FROM FIVE YEAR AVERAGE LICENSED USE		
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Adams, Charlie	122	124	50	-72	-59	-74	-60	6
Alexander, Eugene	105	105	34	-71	-68	-71	-68	17
Allen, Bud	237	290	86	-151	-64	-204	-70	16
Allen, Richard & Sharon	51	31	18	-33	-65	-13	-42	9
Arkoosh & Zidan	3629	2052	1790	-1839	-51	-262	-13	15
Armstrong, Forest	464	385	150	-314	-68	-235	-61	32
Astorquia, Josephine	1606	839	875	-731	-46	+36	+4	21
Baldwin, Clyde	61	36	5	-56	-92	-31	-86	10
Baldwin, J.D.	150	135	60	-90	-60	-75	-56	12
Baldwin, L.W.	417	374	196	-221	- 053	-178	-48	14
Bancroft, Paul	514	476	185	-329	-64	-291	-61	42
Bauscher Ranch	807	603	371	-436	- 054	-232	-38	15
Bellamy, Don	482	237	257	-225	-47	+20	+8	50
Bilboa, Alex	594	514	222	-372	-63	-292	-57	39
Braun, Gordon	83	83	60	-23	-28	-23	-28	3
Bray, Sterling & Ada	1031	507	349	-682	-66	-158	-31	34
Breckenridge, L.L.	2960	373	1526	-1434	-48	+1153	+309	12
Broadie, Lester	261	215	135	-126	-48	-80	-37	14
Brown, Evan J.	326	380	388	+62	+19	+8	+2	38
Brown, John, Inc.	1005	347	527	-478	-48	+180	+52	25
Browning, Charlie	90	27	46	-44	-49	+19	+70	4
Burman Grazing Assn.	815	814	263	-552	-68	-551	-68	14
Butler, Dale T.	483	362	257	-226	-47	-105	-29	23
Byce, James W.	183	208	66	-117	-64	-142	-68	3
Byrum, Gary	272	238	145	-127	-47	-93	-39	14
Calarco Cattle	2912	2459	1874	-1038	-36	-585	-24	24
Campbell L & L	1720	745	820	-900	-52	+75	+10	10
Castle, James C.	88	82	76	-12	-14	-6	-7	13
Chambers, Ferrel	4	1	2	-2	-50	+1	100	* 2/
Circle Hanging H	83	71	67	-16	-19	-4	-6	7
Clark, Wayne	876	759	533	-343	-39	-226	-30	18
Coiner & Sons	23	1	12	-11	-48	+11	+1100	* 2/
Connell, Sanford	182	182	59	-123	-68	-123	-68	8
Connell, William	47	46	15	-32	-68	-31	-67	5
Croft Construction Co.	228	141	91	-137	-60	-50	-35	13
Depew, George	30	30	10	-20	-67	-20	-67	1
Double D. Ranch	293	335	349	+56	+19	+14	+4	12
Drum, E.E.	496	320	203	-293	-59	-117	-37	39
Faught, Waldo	39	30	13	-26	-67	-17	-57	7
Faulkner L & L	8329	6023	4002	-4327	-52	-2021	-34	28
Flying Triangle	1302	615	879	-423	-32	+264	+43	12
Fredrickson, J.E.	240	195	146	-94	-39	-49	-25	18
Freeman, J.E.	345	345	111	-234	-68	-234	-68	16
Gardiner, C.W. & Sons	255	254	20	-235	-92	-234	-92	3
Guthrie, Evan	275	209	114	-161	-59	-95	-45	8
Haga, Marguerite	1004	611	400	-604	-60	-211	-35	42
Hansen, C.M.	26	73	52	+26	100	-21	-29	2
Hansen, Mark	1164	999	520	-644	-55	-479	-48	9
Hess, Leroy	100	98	34	-66	-66	-64	-65	33
Iest, C. Estate	1026	1026	573	-453	-44	-453	-44	8
Johnson, Wendell	694	782	826	+132	+19	+44	+6	12
Jones, Waldo	356	316	146	-210	-59	-170	-54	3
Jones & Sandy	3506	1292	1788	-1718	-49	+496	+38	35
Karstetter, G.W.	138	138	46	-92	-67	-92	-67	3
Kast C K Cattle Co.	3342	3635	1157	-2185	-65	-2478	-68	14
Kast, Mike	173	173	58	-115	-66	-115	-66	16
Kerner, Gilbert	241	230	99	-142	-59	-131	-57	38
Kerner, Oscar	338	316	138	-200	-59	-178	-56	26
Kevan, James	23	23	39	+16	+70	+16	+70	1
Kinney, Victor	413	382	267	-146	-35	-115	-30	13
Krahn, Ben	572	305	232	-340	-59	-73	-24	19

TABLE 8-30 Continued

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY
FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA
UNDER ALTERNATIVE 4

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS FROM ACTIVE GRAZING QUALIFICATIONS		REQUIRED ADJUSTMENTS FROM FIVE YEAR AVERAGE LICENSED USE		DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Leavell Cattle Co.	2026	1036	856	-1170	-58	-180	-17	3
Leeper, E.L.	25	25	14	-11	-44	-11	-44	5
Lockwood L & L	373	346	152	-221	-59	-194	-56	18
Luther, Charles	305	225	162	-143	-47	-63	-28	4
M & S Company	116	133	105	-11	-9	-28	-21	1
Meyers, Samuel	15	17	7	-8	-53	-10	-59	1
Miller, Ilene	105	105	44	-61	-58	-61	-58	26
Mink, Inc.	472	422	251	-221	-47	-171	-41	11
Mitchell, Earl	33	33	12	-21	-64	-21	-64	19
Molyneux, A.W.	298	335	355	+57	+19	+20	+6	16
Moody, G. & Sons	869	672	199	-670	-77	-473	-70	41
Nielson, Morris	42	40	22	-20	-48	-18	-45	6
Norman, Karl O.	68	68	47	-21	-31	-21	-31	10
North Fork Ranch	132	1	69	-63	-48	+68	+6800	5
Oneida Farms, Inc.	312	131	218	-94	-30	+87	+66	6
Osborne, Dwight	1697	888	679	-1018	-60	-209	-24	57
Parke, John	476	247	169	-307	-65	-78	-32	38
Patterson, Manning	1649	1097	1128	-521	-32	+31	+3	21
Pauls, Gayland	464	372	247	-217	-47	-125	-34	10
Pendleton, Charles	1200	788	489	-711	-59	-299	-38	43
Phelps, F.F.	2779	2368	992	-1787	-64	-1376	-58	39
Picabo Livestock	1268	899	98	-1170	-92	-801	-89	5
Pugmire, Marion	426	334	144	-282	-66	-190	-57	23
Quarter Circle Lazy H	549	581	232	-317	-58	-349	-60	13
Reeder, Glen	90	89	57	-33	-37	-32	-36	11
Reedy, Carrie L.	643	466	147	-496	-77	-319	-68	25
Renner, Lawrence	340	213	78	-262	-77	-135	-63	19
Richtron, Inc.	348	402	414	+66	+19	+12	+3	14
Ritter, James B.	212	121	68	-144	-68	-53	-44	9
Riley, Carl	314	314	101	-213	-68	-213	-68	16
Ruiz, Bernardo	160	1	52	-108	-68	+51	+5100	5
Salmon Falls Sheep Co.	392	263	180	-212	-54	-83	-32	4
Sandy Brothers	612	435	250	-362	-59	-185	-43	22
Saody, Donald	64	62	26	-38	-59	-36	-58	35
Sant, Evert	639	599	261	-378	-59	-338	-56	34
Scheer, Jack	238	72	100	-138	-58	+28	+39	11
Schmidt Brothers	570	360	228	-342	-60	-132	-37	6
Schoessler, Carl	54	54	4	-50	-93	-50	-93	3
Sliman & Guthrie	676	337	276	-400	-41	-61	-18	19
Sliman Sheep Co.	3751	2468	1769	-1982	-53	-699	-28	26
Sorenson, Gordon	129	131	116	-13	-10	-15	-11	2
Spring Cove Ranch	705	784	188	-517	-73	-596	-76	21
Struthers, Robert J.	253	263	166	-87	-34	-97	-37	* 2/
Stevenson, John	196	185	158	-38	-19	-27	-15	16
Stutzman, Clifford	458	416	187	-271	-59	-229	-55	32
Tews, Lawrence	5	3	2	-3	-60	-1	-33	1
Thomas, Charles	433	279	177	-256	-59	-102	-37	33
Tschannen, Josephine	284	213	96	-188	-66	-117	-55	22
Varin, John	576	502	223	-353	-61	-279	-56	12
Varin, William	510	464	209	-301	-59	-255	-55	28
Vaughn Brothers	123	1	40	-83	-67	+39	+3900	29
Yore Cattle Co.	5253	3740	3541	-1712	-33	-199	-5	29

1/ AUMs and dependency based on the present situation as of January 1978. All numbers have been rounded.
2/ Less than one percent.

Source: Bureau of Land Management, Idaho State Office

TABLE 8-31

SECONDARY INCOME LOSSES BY INDUSTRY
ALTERNATIVE NO. 4: MAXIMUM REHABILITATION

INDUSTRY	AMOUNT
AGRICULTURE	
Livestock	$ 5,300
Other	4,100
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	5,500
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	5,500
TRANSPORTATION AND COMMUNICATION	5,300
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	5,400
FINANCE, INSURANCE, REAL ESTATE	2,100
SERVICES	2,900
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	$36,100

Source: Bureau of Land Management, Idaho State Office, Dynamic Regional Analysis Model (DYRAM), November 1978

county farm income of $34,856,000 (see Chapter 2, "Socioeconomic Conditions"). Thus, the livestock industry losses from this alternative would be approximately 0.4 percent of the farm income in the study area.

In the long term, 14,114 AUMs could be restored to grazing use, making a total of 54,557 AUMs available for livestock. This would be 28,563 AUMs below the current active qualifications, and 4,174 AUMs below the 1972-1976 average actual use. Since operators could be licensed for more AUMs in the long term than immediately after implementation of the Proposed Action, income for the livestock operators would be partially restored. This potential increase would be $111,600 annually (14,114 AUMs x $7.91 income/AUM). Other industries in the area would also benefit from this long-term gain by the livestock industry. As a result, a total annual income increase could be as much as 139,400 throughout the economy, including livestock (DYRAM Model, BLM 1978). The net result after fifteen years would be $41,660 reduction ($181,060 less $139,400) in annual income throughout the economy of the five-county area.

Social Values and Attitudes. The social impacts resulting from this alternative are the same in kind as for the Proposed Action. Any variation would be in degree of intensity, and this cannot be quantified.

ALTERNATIVE 5:

MODIFIED PROPOSAL

Description of Alternative 5

During the process of analyzing the impacts expected from the Proposed Action, it was determined that the vegetation objectives for five allotments would not be met. These five were Davis Mountain, King Hill, Macon Flat, Picabo, and Timmerman East. No mitigating measures were identified in Chapter 4 to provide for meeting the vegetation objectives because the necessary changes would have involved basic changes in the Proposed Action. Therefore, this alternative was developed as a modification that would meet the vegetation objectives.

Under this alternative, the BLM would modify the grazing system, season of use, forage allocation, and/or land treatment projects in each of 5 allotments. The Proposed Action would be implemented on the remaining 37 allotments.

Forage Allocation

The same process of forage allocation was used for this alternative as for the Proposed Action. The initial stocking rate would be different from the Proposed Action for the five allotments. One of the allotments (King Hill) would have a slight increase, three (Davis Mountain, Picabo, and Timmerman East) a slight decrease, and one (Macon Flat) a substantial decrease. Table 8-32 indicates the changes for each allotment.

The forage allocation to big game would be the same as under the Proposed Action.

Grazing Systems

The grazing systems and seasons of use would be different from the Proposed Action in all five allotments (refer to Table 8-32). The adjustments are considered significant on all five allotments.

Range Improvements

The range improvements necessary to implement this alternative on the Davis Mountain, King Hill, and Macon Flat Allotments are the same as for the Proposed Action. The Timmerman East and Picabo Allotments would have additional improvements, including

TABLE 8 - 32

COMPARISON OF INITIAL STOCKING RATE,
GRAZING SYSTEM AND SEASON OF USE
BETWEEN THE PROPOSED ACTION AND
ALTERNATIVE 5, MODIFIED PROPOSAL

ALLOTMENT NAME 1/	PROPOSED ACTION			ALTERNATIVE 5, MODIFIED PROPOSAL		
	INITIAL STOCKING RATE (AUMs)	GRAZING SYSTEM	SEASON OF USE	INITIAL STOCKING RATE (AUMs)	GRAZING SYSTEM	SEASON OF USE
Davis Mountain	4,063	MRR-4	4/20 - 6/15 11/21 - 12/01	4,058	Same as Proposed Action	
		DR-3	Two Pastures 5/14 - 7/22, One Pasture 9/25 - 11/06 and 11/15 - 12/30		DR-3	One Pasture 5/14 - 7/14, One Pasture 7/15 - 9/14, One Pasture 9/15 - 10/29 and 11/15 - 12/30
		DUF	7/11 - 9/25		Same as Proposed Action	
King Hill	1,129	RR-3	One Pasture 5/01 - 5/31, One Pasture 6/01 - 6/30, One Pasture Rested	1,149	RR-3	A Combination of two Pastures (Different combination every year through a four-year cycle) 4/16 - 6/04, One Pasture 7/20 - 8/19, One Pasture Rested
		DUS	Anytime Between 8/01 and 11/30		DUS	One Pasture 8/20 - 9/16 and 10/16 - 12/31
Macon Flat	2,506	RR-3	Two Pastures 5/01 - 6/15 and 10/16 - 11/30 One Pasture Rested	1,085	RR-3	One Pasture 5/01 - 6/15, One Pasture 10/15 - 11/30, One Pasture Rested
Picabo	420	RR-3	Two Pastures 5/01 - 6/30, Two Pastures 7/01 - 8/31, One Pasture Rested	409	RR-3	Two Pastures 5/21 - 7/20, Two Pastures 7/21 - 9/20, One Pasture Rested
Timmerman East	1,386	MRR-4	Cattle One Pasture 5/01 - 6/10, One Pasture 6/11 - 7/20, One Pasture 7/21 - 8/31, One Pasture Rested Sheep Migratory Use Between 4/16 and 6/15 and between 10/16 and 12/15	1,338	MRR-4	Cattle One Pasture 6/11 - 7/20, One Pasture 9/01 - 10/10, One Pasture 7/21 - 8/31 One Pasture Rested Sheep Same as the Proposed Action
TOTAL - Five Allotments	9,504			8,039		

1/ Only those allotments with differences between the Proposed Action and Alternative 5 are listed in this table.

both management facilities and land treatment projects. Table 8-33 identifies the proposed range improvements and their costs for these two allotments. Adaptation to the grazing system changes necessitated the proposed additional improvements. The general location of these improvements is shown on Map 8-1. As in Alternative 4, Maximum Rehabilitation, the design and execution of all land treatments would be consistent with the applicable resource management plans and would be subject to the constraints listed for the Proposed Action.

Analysis of Alternative 5

The cause agents for this alternative are the same as for the Proposed Action, and include: (1) adjustment of stocking rate (forage allocation), (2) implementation of grazing systems, (3) completion of range improvements (including land treatments), and (4) protection of certain areas from livestock grazing. The expected general adverse and beneficial short- and long-term impacts of these cause agents were analyzed for the ES Area in Chapter 3 and are not repeated here.

Additionally, since the management of only 5 of the 42 proposed allotments would be different from the Proposed Action, the impact analysis will be focused on those five allotments.

Impacts on Soils

Implementation of this alternative would have an overall beneficial impact on soils by improving cover, increasing soil productivity, and reducing erosion. Cover would increase by an estimated 7 percent, and erosion rates would decrease 7 percent from a present rate of 1.00 ac ft/sq mi/yr to 0.93 ac ft/sq mi/yr. This compares with a 5 percent change anticipated under the Proposed Action.

Under this alternative, low erosion rates would be expected on three allotments (32,448 acres), moderate rates on 21 allotments (206,406 acres), and high erosion rates on 18 allotments (325,770 acres). Under the Proposed Action the same three allotments would have low erosion rates, but 20 allotments (165,007 acres) would have moderate erosion rates and 19 allotments (367,175 acres) would have high erosion rates. A summary of erosion rates and change in erosion rates is given in Appendix Table A2-1.

Range improvements under the Modified Proposal would have an overall long-term beneficial impact on soils by improving cattle distribution and vegetative cover. However, increases in erosion are expected in the short term on 13,780 acres (Table 8-34) as compared to 6,109 acres under the Proposed Action (Table 8-3).

The short-term and long-term impacts resulting from water developments and management facilities would be very similar to those occurring under the Proposed Action (see Chapter 3, "Impacts

TABLE 8 - 33

COMPARISON OF RANGE IMPROVEMENTS BETWEEN THE PROPOSED ACTION AND ALTERNATIVE 5, MODIFIED PROPOSAL

ALLOTMENT NAME 1/	PROPOSED ACTION			ALTERNATIVE 5, MODIFIED PROPOSAL		
	DESCRIPTION	UNITS	COSTS	DESCRIPTION	UNITS	COSTS
Picabo	Fencing	4 miles	$ 6,960	Fencing	4 miles	$ 6,960
				Spring Development	1 each	2,625
				Seeding Only	340 acres	5,449
				Chaining and Seeding	140 acres	2,184
				Controlled Burning (Without Seeding)	390 acres	1,780
	Total Cost for Picabo Allotment		$ 6,960			$18,998
Timmerman East	Fencing	24 miles	$41,760	Fencing	24 miles	$41,760
	Cattleguards	2 each	2,400	Cattleguards	2 each	2,400
	Railroad Cattleguards	2 each	2,000	Railroad Cattleguards	2 each	2,000
	Well + Storage Tank	1 each	22,000	Well + Storage Tank	1 each	22,000
	Troughs	9 each	2,925	Troughs	9 each	2,925
	Pipeline	8 miles	33,600	Pipeline	8 miles	33,600
	Reservoir Construction	1 each	5,000	Reservoir Construction	2 each	10,000
				Controlled Burning	6,800 acres	30,600
	Total Cost for Timmerman East Allotment		$109,685			$145,285

1/ Only those allotments with differences between the Proposed Action and Alternative 5 are listed in this table.

TABLE 8 - 34

EXPECTED SHORT-TERM AND LONG-TERM DISTURBANCE FROM ALTERNATIVE 5 RANGE IMPROVEMENTS

PROPOSED RANGE IMPROVEMENTS	TOTAL UNITS	UNIT DESCRIP-TION	SHORT-TERM DISTURBANCE		LONG-TERM DISTURBANCE	
			PER UNIT (Acres)	TOTAL (Acres)	PER UNIT (Acres)	TOTAL (Acres)
WATER DEVELOPMENTS						
Water Wells	1.0	each	0.10	0.1	0.10	0.10
Storage Tanks	1.0	each	0.10	0.1	0.04	0.04
Pipelines	32.5	miles	1.50	48.8	2.10 1/	69.30 1/
Spring Development	17.0	each	0.01	0.2	2.01 1/	34.17 1/
Spring Maintenance	5.0	each	0.01	0.1	---	---
Reservoir Construction	25.0	each	1.15	28.8	2.70	67.50 1/
Reservoir Maintenance	11.0	each	0.69	7.6	---	---
Subtotal Water Dev.				85.7	---	171.11
MANAGEMENT FACILITIES						
Fencing	117.5	miles	1.21	142.1	0.20	23.50
Cattleguards	20.0	each	0.01	0.2	0.01	0.20
Stock Trails	20.0	miles	1.50	30.0	1.50	30.00
Subtotal Mgmt. Fac.				172.3	---	53.70
LAND TREATMENTS						
Prescribed Burning (Without Seeding	9730	acres	1.00	9730	---	---
Herbicide Spraying (Without Seeding)	1200	acres	1.00	1200	---	---
Chaining + Seeding	140	acres	1.00	140	---	---
Burning + Seeding	1500	acres	1.00	1500	---	---
Seeding Only	952	acres	1.00	952	---	---
Subtotal Land Treatments				13,522	---	---
TOTAL - ALL TYPES OF IMPROVEMENTS				13,780		225

1/ Includes two acre "sacrifice area" depleted of vegetation by livestock concentration.

on Soils"). In the short term, 258 acres (compared with 257 acres under the Proposed Action) would have a 200 percent increase in erosion rates. In the long term, 225 acres would be disturbed, compared to 220 acres disturbed under the Proposed Action. About 182 acres (compared to 178 acres under the Proposed Action) would have long-term erosion rates six times the present rate.

Proposed land treatments on 13,522 acres would cause a 60-450 percent increase in erosion rates in the short term, depending on the kind of treatment and the soils. This compares with 60-300 percent increases on 5,852 acres under the Proposed Action. These short-term adverse impacts would decrease as revegetation proceeded. On 9,730 acres of prescribed burning (compared to 2,540 acres under the Proposed Action) erosion rates would increase 150 percent. The impacts resulting from the proposed burning and seeding would be the same as those under the Proposed Action (see Chapter 3, "Impacts on Soils"). On 952 acres of seeding, erosion rates would increase by 175 percent, as compared to a 150 percent increase on 612 acres of seeding under the Proposed Action. The impacts from herbicide spraying would be the same as those under the Proposed Action. Chaining and seeding on 140 acres would increase erosion rates 450 percent. This treatment is not proposed in the Proposed Action. Long-term impacts from all land treatments would be negligible or slightly beneficial.

The impacts occurring on the proposed unallotted areas would be quite similar to those occurring under the Proposed Action (see Chapter 3, "Impacts on Soils"). The only difference between this alternative and the Proposed Action would be that decreases in erosion rates on the 625 acres proposed for inclusion into allotments would be 7-16 percent rather than 5-16 percent.

Impacts on Water Resources

Impacts from the Modified Proposal would be nearly identical to those of the Proposed Action. Three allotments (109,487 acres) would show slight watershed improvement with increased cover. The increase is not expected to substantially change the impacts on water resources as compared to the Proposed Action, although only 15,768 acres would have small reductions in cover, compared to 125,255 acres with the Proposed Action.

Impacts on Vegetation

This alternative would require a downward adjustment from 58,731 AUMs annual use (1972-1976 average) to 36,673 AUMs, a 38 percent reduction. Vegetation grazed annually by livestock and big game would be 41,320 AUMs (33,056,000 pounds air-dried forage). This would be 97 percent of the amount under the Proposed Action (4,647 wildlife AUMs plus 38,138 livestock AUMs, 34,228,000 pounds).

One immediate and long-term beneficial effect from the downward adjustment on the overall vegetation resource would be a reduction in the amount of herbage consumed by livestock. Presently, an estimated 66,040,000 pounds of palatable grasses and forbs are being produced annually on public lands in the ES Area. Under this alternative, consumption would decrease from 46,984,800 to 29,338,400 pounds annually, leaving 17,646,400 pounds more vegetation on the land each year.

Under present stocking levels approximately 11.7 percent of total vegetation production is being consumed as forage by livestock. With this alternative that consumption would decrease to 7.3 percent. The impact of leaving more herbaceous (nonwoody) plant material would be much greater than that implied by the small percentage decrease of total production harvested by livestock. Increased herbaceous vegetation left unharvested would remain as litter and help protect the soil from wind and/or water erosion, as described in Chapter 3, "Impacts on Vegetation".

Improved vigor of forage plants is expected from reduced grazing with the Modified Proposal Alternative. Considered alone, adjustment in the stocking rate would lessen the grazing pressure on less desirable areas such as slopes above 20 percent and areas greater than one mile from water. However, grazing pressure would remain relatively uniform within the areas grazed. The lower number of livestock would simply remain in the desirable grazing areas for a longer period of time and would not be forced to utilize the less desirable areas (Hormay 1970). The grazing systems, as in the Proposed Action, would reduce this effect. Generally, less total area would be grazed by livestock. Forage plants in the ungrazed or lightly grazed areas would, in a few years, gain increased vigor, develop healthy root systems, store abundant food reserves, produce viable seeds, and provide an abundance of plant litter.

The range improvements different from the Proposed Action are shown in Table 8-33. All allotments except Picabo and Timmerman East have exactly the same improvements under the Proposed Action and the Modifed Proposal.

The impacts from the construction and physical presence of the range improvements called for under Alternative 5 would be essentially the same as those described for the Proposed Action. The construction phase of the water developments (Table 8-34) would remove 86 acres from production; over the long term, 171 acres would be removed from production. Fences, cattleguards, and stock trails would disturb 172 acres in the short term and 54 acres in the long term. Land treatments would disturb the vegetation on 13,522 acres in the short term. No long-term disturbance would be anticipated because either seeded forage plant species or native forage species released through brush control would gain vigor and fully occupy the treated sites.

The primary reason for the Modified Proposal Alternative is that in the Proposed Action, five allotments would have grazing seasons (including season of use) that would cause adverse effects on vegetation. The principal problem would result from insufficient rest from defoliation (grazing) during the critical green period. These allotments, Davis Mountain, King Hill, Macon Flat, Picabo, and Timmerman East, had grazing systems (on the entire allotment or portions thereof, totaling 115,132 acres of public land or 20 percent of the ES Area) that would adversely affect a wide variety of vegetation, especially riparian vegetation.

The five allotments are shown in Table 8-32, which compares the initial stocking rate, grazing system, and season of use between the Proposed Action and the Modified Proposal. Only Macon Flat has a significantly different stocking rate with this alternative than with the Proposed Action. All five allotments have different seasons of use with this alternative than with the Proposed Action. The grazing systems for the five allotments have the same letter and number designations in Table 8-32 for both the Modified Proposal and the Proposed Action. However, the actual pattern of pasture use is the same only for the Picabo Allotment.

The five allotments were analyzed in the same way and to the same degree under this alternative as under the Proposed Action. To understand the process, the reader should review the "Impacts on Vegetation" section of Chapter 3, paying particular attention to the review of applicable literature and to Tables 3-5 and 3-6. Table 3-6 is especially important because the timing of defoliation (grazing) through the yearly growth cycle largely determines vegetation response to grazing. To facilitate a meaningful analysis, the grazing systems were grouped into categories in Table 8-35, which shows short-term (one year) vegetation impacts by grazing use period. The effects of defoliation (grazing shown in Table 3-6) were considered when determining the single-year impacts to vegetation described in Table 8-35.

When reading the short-term impacts to vegetation in Table 8-35 one may incorrectly conclude that a single grazing treatment would impact the vegetation beyond its ability to recover. Hormay (1970) pointed out that perennial plants store enough food to last for several years. So even if the plants are defoliated (grazed) for a year or two, they do not die. Under the grazing program that allows continuous close grazing year after year during the green period, perennial plants cannot make and replenish food reserves. As a result, the reserves are ultimately depleted and the plants die. However, by periodically resting the plants from defoliation (grazing) the basic needs of forage plants are met. Hormay concluded that one or two years of growing season rest are usually adequate to restore plant vigor.

The reader is cautioned to review not only the one-year impacts for any given allotment but also the net long-term impacts shown in Table 8-36. Table 8-35 reflects impacts from grazing systems only; Table 8-36 shows the combined effects of forage allocation, range improvements, and grazing systems.

The effectiveness of the two interacting factors, adjustment in stocking rates and grazing systems, was measured against specific objectives for each allotment (Table 1-4). The present

TABLE 8 - 35

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION
BY GRAZING SYSTEM AND GRAZING USE PERIOD
UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	PERIOD OF GRAZING USE OR NON-USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATION (GRAZING) 3/ OR NON-DEFOLIATION (RESTING)
REST ROTATION SYSTEMS USING THREE TREATMENTS RR-3			
Macon Flat Allotment	38,982	One pasture grazed late spring (5/01-6/15).	Vigor, seed production, and litter accumulation greatly reduced.
		One pasture grazed early fall to late fall (10/16-11/30).	Vigor and reproduction not significantly affected, litter accumulation reduced (standing dead).
		One pasture completely rested.	Vigor, seed production, and litter accumulation normal.
Picabo Allotment	7,870	Two pastures grazed late spring to late summer (5/21-7/20).	Vigor, seed production, and litter accumulation reduced.
		Two pastures grazed late summer to early fall (7/21-9/20).	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested.	Vigor, seed production, and litter accumulation nearly normal, seedlings established from previous year's seed trampling.
**King Hill Allotment Bellmare Pasture Hog Creek Pasture South Pasture Walker Reservoir Pasture	20,334	A combination of two pastures (Different combination every year through a four-year cycle) grazed early spring to late spring (4/16-6/04).	Vigor, seed production, and litter accumulation greatly reduced on only one of the two pastures. One of the pastures is only used for 10 days so vigor, seed production, and litter accumulation would be only slightly reduced.
		One pasture grazed late summer (7/20-8/19).	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture completely rested	Vigor, seed production, and litter accumulation nearly normal, seedlings established from previous year's seed trampling.
MODIFIED REST ROTATION SYSTEMS USING FOUR TREATMENTS MRR-4			
Timmerman East Allotment	28,952	Sonners & Poleline Pastures	
		Grazed early spring to late summer (4/16-7/20) taking 78 percent of available forage; then again early fall to late fall (10/16-12/15) taking 22 percent of available forage one year.	Vigor, seed production, and litter accumulation greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation further reduced (standing dead) by fall grazing.
		Grazed early spring through late spring (4/16-6/15) taking 22 percent of available forage; then again early fall (9/01-10/10) taking 56 percent of available forage; then again early fall to late fall (10/16-12/15) taking 22 percent of available forage one year.	Vigor, seed production, and litter accumulation slightly reduced by light spring grazing; vigor not significantly affected, some seed planted by trampling, litter accumulation further reduced (standing dead) by fall grazing.
		Grazed early spring through late spring (4/16-6/15) taking 22 percent of available forage; then again late summer (7/21-8/31) taking 56 percent of available forage; then again early fall to late fall (10/16-12/15) taking 22 percent of available forage one year.	Vigor, seed production, and litter accumulation slightly reduced by light spring grazing; vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation further reduced by late summer grazing; vigor and reproduction not significantly affected, litter further reduced (standing dead) by fall grazing.
		Grazed early spring through late spring (4/16-6/15) taking 22 percent of available forage; then again early fall to late fall (10/16-12/15) taking 22 percent of available forage one year.	Vigor, seed production, and litter accumulation slightly reduced by light spring grazing; some seedlings damaged but most become established; vigor not significantly affected, some seed planted by trampling, litter accumulation further reduced (standing dead) by fall grazing.
		Lincoln & Blaine Pastures	
		Grazed early spring to late summer (4/16-7/20) taking 80 percent of available forage; then again early fall to late fall (10/16-12/15) taking 18 percent of available forage one year.	Vigor, seed production, and litter accumulation greatly reduced by spring grazing; vigor and reproduction not significantly affected, litter accumulation further reduced (standing dead) by fall grazing.
		Grazed early fall (9/01-10/10) taking 54 percent of available AUMs one year.	Vigor not significantly affected, some seed planted by trampling, litter accumulation reduced (standing dead) by fall grazing.

TABLE 8 - 35

SHORT TERM (ONE YEAR) IMPACTS TO VEGETATION
BY GRAZING SYSTEM AND GRAZING USE PERIOD
UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	PERIOD OF GRAZING USE OR NON-USE (REST) 2/	IMPACTS TO VEGETATION RESULTING FROM DEFOLIATION (GRAZING) 3/ OR NON-DEFOLIATION (RESTING)
Timmerman East Allotment		Lincoln & Blaine Pastures Continued	
		Grazed early spring through late spring (4/16-6/15) taking 26 percent of available forage; then again late summer (7/21-8/31) taking 54 percent of available forage; then again early fall to late fall (10/16-12/15) taking 18 percent of available forage one year.	Vigor, seed production, and litter accumulation slightly reduced by light spring grazing; vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation further reduced by late summer grazing; vigor and reproduction not significantly affected, litter further reduced (standing dead) by fall grazing.
		Completely rested from grazing one year.	Vigor, seed production, and litter accumulation nearly normal, seedlings established from previous year's seed trampling.
DEFERRED ROTATION SYSTEMS USING THREE TREATMENTS			
***Davis Mountain Allotment Deer Creek Pasture Upper Ferguson Pasture Upper Radermacher Pasture	18,994	One pasture grazed late spring to early summer (5/14-7/14).	Vigor, seed production, and litter accumulation greatly reduced
		One pasture grazed late summer to early fall (7/15-9/14).	Vigor moderately to slightly reduced, much seed planted by trampling, litter accumulation reduced.
		One pasture grazed early fall (9/14-10/29); then again late fall to early winter (11/15-12/30).	Vigor not significantly affected, some seed planted by trampling, litter accumulation reduced (standing dead); seedlings established from previous year's seed trampling.

1/ The King Hill Allotment has two asterisks (**) meaning that it has two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are not part of this analysis because the Proposed Action grazing system would not cause adverse effects on the vegetation. The Davis Mountain allotment has three asterisks (***), that allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" section in Chapter 1. Specific allotment and pasture locations are shown on Map 1-2.

2/ Both period of use, e.g., "early spring" and "late spring", and specific calendar dates are given. The periods of use are the same periods for which phenological (life cycle) occurrences and effects of defoliation (grazing) are defined in Table 3-6. The calendar dates provide a means to determine more precisely what the impacts of grazing within a period will be. For example, plant vigor is reduced to a greater degree by grazing between 7/16 and 7/31, when the plant is still green, than by grazing between 8/16 and 8/31, when the plant is almost dormant, even though the range of both dates falls within the defined late summer use period.

3/ Modifying words are used in the statement of impact. It is not possible to exactly quantify the impact of grazing on plant vigor, reproductive success, or litter (dead plant parts) accumulation except under controlled conditions. Species variation, normal variation within species, grazing use period, class of grazing animal (cattle, sheep), animal behavior and other factors defy quantification. Still, the magnitude of expected impact may be greater (or lesser) in some instances than in others. The magnitude is defined according to this spectrum:

LESSER Not Significantly Affected : Slightly Reduced : Moderately Reduced : Reduced : Greatly Reduced GREATER

4/ Non-defoliation, or resting forage plants from grazing, has beneficial effects. The plant is able to complete it NORMAL annual life cycle, or at least part of the cycle, without the stressful effects of losing part of its food manufacturing tissue (leaves and stems) or part of its reproductive tissue (seedheads and seeds). Table 3-6 shows some effects from defoliation at various periods through the year.

The beneficial impacts of part-season or whole-season rest are defined according to this spectrum:

Much Less Than Normal	Less Than Normal	Nearly Normal	Normal
This is the condition of plants weakened by several seasons of very stressful defoliation.			This is the condition of plants protected from grazing

TABLE 8-36

NET LONG-TERM IMPACTS ON VEGETATION FOR THE KEY ALLOTMENTS
IN ALTERNATIVE 5, MODIFIED PROPOSAL

ALLOTMENT NAME	PRESENT CONSUMPTION OF FORAGE BY LIVESTOCK 1/ (Pounds)	PROPOSED CONSUMPTION OF FORAGE BY LIVESTOCK 2/ (Pounds	PERCENT CHANGE	DESCRIPTION OF EXPECTED LONG TERM IMPACTS RESULTING FROM FORAGE ALLOCATION, GRAZING SYSTEMS, CONSTRUCTION OF RANGE IMPROVEMENTS, AND OTHER CONSIDERATIONS 3/
Davis Mountain	**2,696,800**	**3,246,400**	**20% Increase**	**The proposed initial stocking rate would require 549,600 pounds more forage than the present stocking rate. The four treatment modified rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage increase and grazing system would result in net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would decrease over the long term.** **The three-treatment deferred rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term.** **The deferment of use until near seed ripe (7/11-9/25) grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage increase and grazing system would result in net long-term maintenance of plant vigor and seed production. The total ground cover of plant litter would increase over the long term.** **When all factors are considered, the specific objectives of the Proposed Action for this allotment would be met in 15 years.**
King Hill	**2,402,400**	919,200	62% Decrease	The proposed initial stocking rate would require 1,483,200 pounds less forage than the present stocking rate. The three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. Deferment of use until after seed ripe time with the proposed stocking rate in the North Pasture would result in a net long term improvement in the vegetation condition, plant vigor, seed production, and litter accumulation. When all factors are considered, the specific objectives of the Proposed Action for this allotment would be met in 15 years.
Macon Flat	3,743,200	868,000	77% Decrease	The proposed initial stocking rate would require 2,875,200 pounds less forage than the present stocking rate. The three treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
Picabo	778,400	327,200	58% Decrease	The proposed initial stocking rate would require 451,200 pounds less forage than the present stocking rate. The five pasture, three-treatment rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a new long-term improvement of plant vigor and seed production. The total ground cover of plant litter would increase over the long term. The specific objectives of the Proposed Action for this allotment would be met in 15 years.
Timmerman East	773,600	1,070,400	38% Increase	The proposed initial stocking rate would require 296,800 pounds more forage than the present stocking rate. The modified four pasture rest rotation grazing system would provide the necessary rest from grazing to meet the basic plant needs. The combined forage allocation and grazing system would result in a net long-term improvement in plant vigor and seed production. The total ground cover of plant litter would increase over the long term. When all factors are considered, the specific objectives of the Proposed Action would be met in 15 years.

1/ Present consumption of forage represents the 1972-1976 average licensed use (in AUMs) multiplied by 800 pounds per AUM.
2/ Proposed consumption of forage represents the Alternative 5 stocking rate (in AUMs) multiplied by 800 pounds per AUM.
3/ Table 1-4 shows specific objectives of the Proposed Action. Only the objectives for "Livestock Grazing Capacity", "Vegetation Composition", and "Vegetation Condition Class" are considered here.

situation, objectives, and expected results are shown in Table 8-37. Essentially, the Modified Proposal would meet all the specific objectives of the Proposed Action. Some of the vegetation composition objectives appear to be set optimistically high. In all instances, improved vegetation composition from the existing situation would occur.

The problem of heavy utilization of yearly forage production (71 percent presently, 46 percent under Proposed Action) would be resolved because only 44 percent would be utilized under the Modified Proposal. The present problem of 65 percent of the total yearly livestock grazing taking place during the early spring to early summer green period would be resolved on over 99 percent of the ES Area. Under this alternative, grazing management systems that incorporate periodic rest during the critical spring and early summer growing seasons would be expected to improve forage plant vigor and reproductive success. The only exception would be the small, individually fenced areas for which annual spring grazing is proposed (4,143 acres, less than 1 percent of the ES Area), as shown in Table 8-38.

The present problems of poor livestock distribution and repeated grazing during the growing season on the same area would be greatly reduced by the adjustments in stocking rate and implementation of the grazing management systems.

The same vegetation response on 70 unallotted areas, totaling 9,518 acres, would be expected under this alternative as under the Proposed Action (see Chapter 3, "Protection of Areas from Livestock Grazing, Impacts on Vegetation").

Vegetation condition would improve over the next fifteen years as a result of lower level stocking and more intensive grazing management under this alternative. The expected vegetation condition and production (expressed in AUMs) is shown in Table 8-38 for each of four condition categories and two man-caused categories (seeding and brush control) by grazing system. These predictions are best professional estimates based on applicable soils data, field samples, and previously observed responses of vegetation. Table 8-39 is a summary comparison of existing vegetation condition and the expected condition in fifteen years under the Modified Proposal. The number of seedings and brush control acres would remain nearly the same under this alternative, mainly as a result of seeded species regaining vigor and producing more than 15 percent of the total herbage yield on previously seeded sites, land treatments on 13,522 acres, and natural brush encroachment.

The amount of public land in the ES Area in highly disturbed or poor condition would change from the existing 48 percent to 39 percent of the total under this alternative (42 percent with the Proposed Action). Public land in fair and good condition presently makes up 40 percent of the total; with this alternative this figure would increase to 49 percent (47 percent with Proposed Action).

TABLE 8 - 37

COMPARISON OF EXPECTED RESULTS WITH SPECIFIC OBJECTIVES FOR THE KEY ALLOTMENTS
IN ALTERNATIVE 5, MODIFIED PROPOSAL

ALLOTMENT NAME	LIVESTOCK GRAZING CAPACITY (AUMS)			VEGETATION COMPOSITION ON DESIGNATED KEY MANAGEMENT AREAS (PERCENT OF TOTAL HERBAGE PRODUCTION)				VEGETATION CONDITION CLASS (ACRES)			
	PRESENT	OBJECTIVE	EXPECTED	PERCENT COMPOSION OF KEY SPECIES		OBJECTIVE	EXPECTED	PRESENT		OBJECTIVE	EXPECTED
Davis Mountain	4,283	5,374	5,403	Lower Area	3%	7%	5%	Seeding	4,815	4,815	4,815
				Combination of:				Br. Cont.	1,056	---	---
				Bluebunch wheatgrass				H. Dist.	1,585	---	---
				Thurber needlegrass				Poor	10,853	5,855	5,632
				Crested wheatgrass				Fair	18,927	25,628	25,178
				Upper Area	7%	13%	10%	Good	1,794	2,732	3,405
				Idaho fescue							
				Bluebunch wheatgrass							
				Thurber needlegrass							
				Crested wheatgrass							
King Hill	1,470	1,895	1,927	Bluebunch wheatgrass	5%	15%	10%	Seeding	2,599	2,599	2,599
				Thurber needlegrass	5	15	10	Poor	19,657	11,670	11,073
				Sandberg bluegrass	15	35	20	Fair	2,189	10,176	10,773
				Bottlebrush squirreltail	15	35	20	Good	923	923	923
				Crested wheatgrass (seedings only)	50	50	65				
Macon Flat	3,367	4,414	4,591	Combination of:	35%	50%	50%	Poor	19,779	18,579	17,598
				Bluebunch wheatgrass				Fair	18,749	18,778	19,234
				Bottlebrush squirreltail				Good	454	1,625	2,150
				Sandberg bluegrass							
Picabo	452	681	745	Bluebunch wheatgrass:				Seeding	861	861	1,041
				On loamy sites	2%	10%	6%	Br. Cont.	---	---	390
				On south slopes	3	10	8	Poor	5,243	4,784	3,973
				On north slopes	14	19	17	Fair	1,766	1,910	2,466
								Good	---	315	---
Timmerman East	1,803	2,328	2,750	Poleline & Lincoln Pastures:				Br. Cont.	---	---	6,800
				Bluebunch wheatgrass	2%	7%	5%	Poor	8,960	5,600	2,882
				Thurber needlegrass	5	11	8	Fair	19,992	23,352	19,270
				Blaine & Sonners Pastures:							
				Bluebunch wheatgrass	6%	12%	9%				
				Thurber needlegrass	5	11	8				

TABLE 8-38

EXPECTED VEGETATION CONDITION IN 15 YEARS UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
I. REST ROTATION (RR)														
A. RR With Three Treatments (RR-3)														
Dempsey Allotment	3,267	451	0	0	1,857	153	7,905	785	4,539	471	2,446	252	20,014	2,112
Macon Flat	0	0	0	0	0	0	17,598	1,863	19,234	2,558	2,150	327	38,982	4,748
**North Gooding Allotment	2,420	659	2,720	517	0	0	2,314	277	10,289	1,140	6,845	1,271	24,588	3,864
County Line Pasture														
Flat Top Pasture														
Peck Meadow Pasture														
Picabo Allotment	1,041	260	390	59	0	0	3,973	355	2,466	300	0	0	7,870	974
**Canal Allotment	0	0	0	0	0	0	0	0	399	52	0	0	399	52
North Pasture														
Compound Allotment	0	0	0	0	0	0	0	0	457	67	0	0	457	67
**King Hill Allotment	2,599	337	0	0	0	0	11,073	942	5,819	424	843	48	20,334	1,751
Bellmare & South Pasture														
Hog Creek Pasture														
Walker Reservoir Pasture														
Lava Allotment	2,000	380	2,500	400	0	0	5,540	400	17,960	700	0	0	28,000	1,880
Struthers Allotment	0	0	0	0	0	0	0	0	2,392	225	0	0	2,392	225
Ticeska Allotment	1,794	376	0	0	0	0	2,097	276	0	0	0	0	3,891	652
Track Allotment	0	0	1,138	204	0	0	0	0	836	86	0	0	1,974	290
Hill City Branch Allotment	0	0	0	0	0	0	407	42	280	38	0	0	687	80
Kime Allotment	0	0	0	0	0	0	354	30	246	30	0	0	600	60
TOTAL FOR RR-3	13,121	2,463	6,748	1,180	1,857	153	51,261	4,970	64,917	6,091	12,284	1,898	150,188	16,755
B. RR With Four Treatments (RR-4)														
Pioneer Allotment	1,794	434	0	0	165	14	4,803	535	0	0	0	0	6,762	983
Richfield Cattle Allotment	0	0	4,658	1,171	0	0	1,780	227	15,577	1,847	0	0	22,015	3,245
**Clover Creek Allotment	3,577	485	0	0	384	40	12,653	1,243	50	5	0	0	16,664	1,773
Bliss Point Pasture														
Bray Lake Pasture														
Canal Pasture														
White Arrow Spring Pasture														
Kinzie Butte Allotment	330	94	1,000	138	0	0	4,756	597	2,598	349	0	0	8,684	1,178
TOTAL FOR RR-4	5,701	1,013	5,658	1,309	549	54	23,992	2,602	18,225	2,201	0	0	54,125	7,179
C. RR With Five Treatments (RR-5)														
Rattlesnake Allotment	465	93	0	0	2,833	216	8,968	748	5,289	465	2,726	258	20,281	1,780
TOTAL FOR RR-5	465	93	0	0	2,833	216	8,968	748	5,289	465	2,726	258	20,281	1,780
II. MODIFIED REST ROTATION (MRR)														
A. MRR With Three Treatments (MRR-3)														
**Black Canyon Allotment	128	24	0	0	0	0	10,787	649	11,078	1,435	1,448	192	23,441	2,300
City of Rocks Pasture														
Connet Springs Pasture														
Mormon Reservoir Pasture														
**Black Canyon Allotment	3,846	582	0	0	2,750	259	19,257	1,429	743	88	518	74	27,114	2,432
Dead Horse Pasture														
Four Mile Pasture														
Open Crossing Pasture														
North Shoshone Allotment	6,637	1,380	0	0	1,631	235	50,226	7,602	32,601	5,018	2,533	384	93,628	14,619
TOTAL FOR MRR-3	10,611	1,986	0	0	4,381	494	80,270	9,680	44,422	6,541	4,499	650	144,183	19,351
B. MRR With Four Treatments (MRR-4)														
***Davis Mountain Allotment	2,617	444	0	0	0	0	5,162	243	9,670	579	1,300	126	18,749	1,392
Canal Pasture														
Lower Ferguson Pasture														
Lower Radermacher Pasture														
Onion Patch Pasture														
Timmerman East Allotment	0	0	6,800	922	0	0	2,882	203	19,270	1,672	0	0	28,952	2,797
TOTAL FOR MRR-4	2,617	444	6,800	922	0	0	8,044	446	28,940	2,251	1,300	126	47,701	4,189
III. DEFERRED ROTATION (DR)														
A. DR With Two Treatments (DR-2)														
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe														
**Canal Allotment	112	28	0	0	0	0	0	0	0	0	0	0	112	28
South Pasture														
**Clover Creek Allotment	0	0	0	0	0	0	3,510	221	20,193	1,445	2,068	172	25,771	1,838
Coyote Hill Pasture														
Monument Gulch Pasture														
Gwin Ranch	0	0	0	0	0	0	0	0	487	76	0	0	487	76
Lower Magic Allotment	207	50	0	0	0	0	0	0	56	16	0	0	263	66
Spring Creek Allotment	0	0	0	0	0	0	0	0	563	100	0	0	563	100
Spud Patch Allotment	0	0	0	0	0	0	3,088	232	806	109	0	0	3,894	341
The Pasture Allotment	0	0	0	0	695	63	223	20	0	0	0	0	918	83
Tikura Allotment	0	0	0	0	0	0	3,643	235	0	0	0	0	3,643	235
TOTAL FOR 1. DR-2	319	78	0	0	695	63	10,464	708	22,105	1,746	2,068	172	35,651	2,767

TABLE 8-38

EXPECTED VEGETATION CONDITION IN 15 YEARS
NDER ALTERNATIVE 5, MODIFIED PROPOSAL

GRAZING SYSTEM AND ALLOTMENT 1/	SEEDING		BRUSH CONTROL		HIGHLY DISTURBED		POOR		FAIR		GOOD		TOTAL	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
2. DR-2 With Turnout to 6/15; Defer Until After 10/16														
**North Gooding Allotment Dog Creek Pasture Willows Pasture	0	0	0	0	0	0	10,068	592	6,331	730	418	30	16,817	1,352
Swinging Bridge Allotment	0	0	0	0	0	0	120	15	200	30	2,619	385	2,939	430
**Timmerman West Allotment Wedgetop Pasture Well Pasture	0	0	1,280	174	0	0	1,066	115	3,158	217	5,726	371	11,230	877
TOTAL FOR 2. DR-2	0	0	1,280	174	0	0	11,254	722	9,689	977	8,763	786	30,986	2,659
B. DR With Three Treatments (DR-3)														
1. DR-3 With Two Treatments Before And One After Seed Ripe														
Magic Allotment	2,024	387	1,821	335	0	0	0	0	1,194	130	1,013	97	6,052	949
TOTAL FOR 1. DR-3	2,024	387	1,821	335	0	0	0	0	1,194	130	1,013	97	6,052	949
2. DR-3 With One Treatment Before And Two After Seed Ripe														
***Davis Mountain Allotment Deer Creek Pasture Upper Ferguson Pasture Upper Radermacher Pasture	2,198	792	0	0	0	0	450	75	14,316	2,421	2,030	526	18,994	3,814
TOTAL FOR 2. DR-3	2,198	792	0	0	0	0	450	75	14,316	2,421	2,030	526	18,994	3,814
IV. DEFERMENT OF USE (DU)														
A. DU Until Past Peak of Flowering; After 7/01 (DUF)														
***Davis Mountain Allotment Long Gulch Pasture	0	0	0	0	0	0	20	3	1,192	247	75	20	1,287	270
North Slope Allotment	0	0	0	0	0	0	32	4	233	32	396	58	661	94
TOTAL FOR DUF	0	0	0	0	0	0	52	7	1,425	279	471	78	1,948	364
B. DU Until Seed Ripe Time; After 7/20 (DUS)														
Cove Creek Allotment	0	0	0	0	0	0	54	5	0	0	0	0	54	5
**King Hill Allotment North Pasture	0	0	0	0	0	0	0	0	4,954	597	80	9	5,034	606
Schooler Creek Allotment	0	0	0	0	0	0	0	0	49	28	9	5	58	33
TOTAL FOR DUS	0	0	0	0	0	0	54	5	5,003	625	89	14	5,146	644
C. DU Until Dormant Season After 8/20 (DUD)														
"101" Allotment	1,133	189	0	0	184	20	2,821	204	0	0	0	0	4,138	413
TOTAL FOR DUD	1,133	189	0	0	184	20	2,821	204	0	0	0	0	4,138	413
V. MODIFIED DEFERRED ROTATION (MDR)														
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments With Cattle (MDR-2)														
Hash Spring Allotment	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
TOTAL FOR MDR-2	0	0	40	10	0	0	330	84	1,860	427	3,516	813	5,746	1,334
B. MDR With Rotation of Use Periods in Five Pastures (MDR-5)														
Indian Allotment	5,995	1,205	0	0	256	20	12,701	966	12,216	1,159	4,180	602	35,348	3,952
TOTAL FOR MDR-5	5,995	1,205	0	0	256	20	12,701	966	12,216	1,159	4,180	602	35,348	3,952
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)														
Black Buttes Allotment	0	0	0	0	0	0	49	6	0	0	0	0	49	5
"46" Allotment	0	0	0	0	0	0	208	17	0	0	0	0	208	17
Fricke Allotment	0	0	0	0	0	0	87	9	0	0	0	0	87	9
Poison Creek Allotment	0	0	0	0	0	0	269	45	0	0	0	0	269	45
Springdale Allotment	18	14	0	0	0	0	0	0	292	28	0	0	310	42
**Timmerman West Allotment Mahoney Flat Pasture	0	0	0	0	0	0	0	0	0	0	3,220	284	3,220	284
TOTAL FOR ASG	18	14	0	0	0	0	613	76	292	28	3,220	284	4,143	402
TOTALS Acres	44,202		22,347		10,755		211,274		229,893		46,159		564,630	
TOTALS AUMs		3,664		3,930		1,020		21,293		25,341		6,304		66,552

1/ Allotments with two asterisks(**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks (***). That allotment has three distinct types of grazing systems. For an explanantion of grazing system categories see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

TABLE 8-39

SUMMARY COMPARISON OF EXISTING VEGETATION CONDITION, EXPECTED CONDITION IN 15 YEARS UNDER THE PROPOSED ACTION, AND EXPECTED CONDITION IN 15 YEARS UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

VEGETATION CONDITION CATEGORY	EXISTING CONDITION		FUTURE CONDITION - PROPOSED ACTION			FUTURE CONDITION - ALTERNATIVE 5		
	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM EXISTING 2/ (PERCENT)	PUBLIC LAND ACRES	PERCENTAGE OF TOTAL 1/	DEGREE OF CHANGE FROM PROPOSED ACTION 3/ (PERCENT)
Seeding	36,878	6.5%	44,022	7.8%	19.4%	44,202	7.8%	0.4%
Brush Control	30,476	5.4	15,157	2.7	-50.3	22,347	4.0	47.4
Highly Disturbed	38,379	6.8	10.755	1.9	-72.0	10,755	1.9	No Change
Poor	234,931	41.0	226,672	40.1	- 3.5	211,274	37.4	- 6.8
Fair	186,157	33.0	233,156	39.5	19.9	229,893	40.7	3.0
Good	37,809	6.7	44,868	7.9	18.7	46,159	8.2	2.9

1/ May not add to loo percent because of rounding error.

2/ The degree of change represents total acres in the expected future environment under the Proposed Action divided by total acres in the present environment for each vegeation condition category.

3/ The degree of change represents total acres in the expected future environment under this alternative divided by total acres under the expected future environment under the Proposed Action for each vegetation condition category.

Three classes of vegetation trend are shown in Table 8-40. The acres within each trend class are displayed by grazing system. The amount of public land in downward trend would be expected to change from 22 to 1 percent (4 percent with the Proposed Action); the amount in upward trend would change from 2 to 75 percent (67 percent with the Proposed Action); and the amount in static trend would change from 76 to 24 percent (29 percent with the Proposed Action).

In summary, under this alternative forage plant vigor, seed production, and litter accumulation would improve. Average utilization of forage species would decrease from 71 percent to 44 percent. Litter accumulation for soil protection would increase by 17,646,400 pounds the first year and would increase annually thereafter as vigor and production improved. Existing problems of heavy utilization of yearly forage production, grazing during the critical green period, poor livestock distribution, and repeated grazing of the same area during the growing season would be essentially eliminated. Vegetation trend would be upward on 75 percent of the ES Area after 15 years. It would become static at a higher condition level on 24 percent of the area. Only about 1 percent of the area would be in a downward trend. The specific objectives of the Proposed Action would be met in 15 years on all 42 proposed allotments.

Impacts on Terrestrial Wildlife

General Impacts. The many small mammals and birds inhabiting the subject allotments would benefit from the livestock forage allocation under this alternative. In one allotment, Macon Flat, significantly more vegetation would be unallocated than under the Proposed Action, considerably increasing the amount of food and cover for wildlife. In all other allotments, allocation of forage would be the same as, or very similar to, that under the Proposed Action.

The season of use, although not substantially different, would change enough in the Picabo Allotment so that it would cause adverse impacts to the winter habitat of deer. The seasons of use proposed for the other allotments would not be significantly different from the Proposed Action.

The proposed Macon Flat grazing system would be the only system under this alternative that would cause impacts significantly different from the Proposed Action. Essentially, two-thirds of the allotment would be rested through the fall, and then only one of the two pastures would be grazed by sheep. This system would greatly increase the amount of food and cover for all wildlife inhabiting the rested portion of the allotment. The additional food and cover would enhance the animals' productivity and reduce their vulnerability to predators. The impacts from the other grazing systems would be the same as for the Proposed Action.

TABLE 8-40

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
I. REST ROTATION (RR)				
A. RR With Three Treatments (RR-3)				
Dempsey Allotment	20,014	20,014	---	---
Macon Flat Allotment	38,982	38,982	---	---
**North Gooding Allotment	24,588	---	2,459	22,129
County Line Pasture				
Flat Top Pasture				
Peck Meadow Pasture				
Picabo Allotment	7,870	7,870	---	---
**Canal Allotment	399	399	---	---
North Pasture				
Compound Allotment	457	457	---	---
**King Hill Allotment	20,334	14,367	---	5,967
Bellmare & South Pastures				
Hog Creek Pasture				
Walker Reservoir Pasture				
Lava Allotment	28,000	8,501	---	19,499
Struthers Allotment	2,392	2,392	---	---
Ticeska Allotment	3,891	3,891	---	---
Track Allotment	1,974	842	---	1,132
Hill City Branch Allotment	687	687	---	---
Kime Allotment	600	600	---	---
TOTAL FOR RR-3	150,188	99,002	2,459	48,727
B. RR With Four Treatments (RR-4)				
Pioneer Allotment	6,762	6,762	---	---
Richfield Cattle Allotment	22,015	10,885	---	11,130
**Clover Creek Allotment	16,664	16,664	---	---
Bliss Point Pasture				
Bray Lake Pasture				
Canal Pasture				
White Arrow Spring Pasture				
Kinzie Butte Allotment	8,684	7,057	---	1,627
TOTAL FOR RR-4	54,125	41,368	000	12,757
C. RR With Five Treatments (RR-5)				
Rattlesnake Allotment	20,281	20,281	---	---
TOTAL FOR RR-5	20,281	20,281	000	000
II. MODIFIED REST ROTATION (MRR)				
A. MRR With Three Treatments (MRR-3)				
**Black Canyon Allotment	23,441	23,441	---	---
City of Rocks Pasture				
Connet Springs Pasture				
Mormon Reservoir Pasture				
**Black Canyon Allotment	27,114	27,114	---	---
Dead Horse Pasture				
Four Mile Pasture				
Open Crossing Pasture				
North Shoshone Allotment	93,628	93,628	---	---
TOTAL FOR MRR-3	144,183	144,183	000	000

TABLE 8-40 Continued

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres	DOWNWARD (Acres)	STATIC (Acres)
B. MRR With Four Treatments (MRR-4)				
***Davis Mountain Allotment	18,749	18,749	---	---
Canal Pasture				
Lower Ferguson Pasture				
Lower Radermacher Pasture				
Onion Patch Pasture				
Timmerman East Allotment	28,952	8,180	---	20,772
TOTAL FOR MRR-4	47,701	26,929	000	20,772
III. DEFERRED ROTATION (DR)				
A. DR With Two Treatments (DR-2)				
1. DR-2 With Turnout to Seed Ripe; Defer Until After Seed Ripe				
**Canal Allotment	112	---	---	112
South Pasture				
**Clover Creek Allotment	25,771	24,632	---	1,139
Coyote Hill Pasture				
Monument Gulch Pasture				
Gwin Ranch Allotment	487	---	---	487
Lower Magic Allotment	263	---	---	263
Spring Creek Allotment	563	---	---	563
Spud Patch Allotment	3,894	300	1,220	2,374
The Pasture Allotment	918	64	---	854
Tikura Allotment	3,643	---	---	3,643
TOTAL FOR 1. DR-2	35,651	24,996	1,220	9,435
2. DR-2 With Turnout to 6/15; Defer Until After 10/16				
**North Gooding Allotment	16,817	---	1,683	15,134
Dog Creek Pasture				
Willows Pasture				
Swinging Bridge Allotment	2,939	580	---	2,359
**Timmerman West Allotment	11,230	---	1,120	10,110
Wedgetop Pasture				
Well Pasture				
TOTAL FOR 2. DR-2	30,986	580	2,803	27,603
B. DR With Three Treatments (DR-3)				
1. DR-3 With Two Treatments Before and One After Seed Ripe				
Magic Allotment	6,052	1,625	---	4,427
TOTAL FOR 1. DR-3	6,052	1,625	---	4,427
2. DR-3 With One Treatment Before and Two After Seed Ripe				
***Davis Mountain Allotment	18,994	18,994	---	---
Deer Creek Pasture				
Upper Ferguson Pasture				
Upper Radermacher Pasture				
TOTAL FOR 2. DR-3	18,994	18,994	---	---

TABLE 8-40 Continued

EXPECTED VEGETATION TREND IN 15 YEARS
UNDER ALTERNATIVE 5, MODIFIED PROPOSAL

TYPE OF GRAZING SYSTEM AND AREA TO WHICH IT APPLIES (ENTIRE ALLOTMENT OR PORTION OF ALLOTMENT) 1/	PUBLIC LAND (Acres)	EXPECTED FUTURE VEGETATION TREND		
		UPWARD (Acres)	DOWNWARD (Acres)	STATIC (Acres)
IV. DEFERMENT OF USE (DU)				
A. DU Until Past Peak of Flowering; After 7/01 (DUF)				
***Davis Mountain Allotment Long Gulch Pasture	1,287	---	---	1,287
North Slope Allotment	661	---	---	661
TOTAL FOR DUF	1,948	000	000	1,948
B. DU Until Seed Ripe Time; After 7/20 (DUS)				
Cove Creek Allotment	54	54	---	---
**King Hill Allotment North Pasture	5,034	4,148	---	886
Schooler Creek Allotment	58	58	---	---
TOTAL FOR DUS	5,146	4,260	000	886
C. DU Until Dormant Season After 8/20 (DUD)				
"101" Allotment	4,138	4,138	---	---
TOTAL FOR DUD	4,138	4,138	000	000
V. MODIFIED DEFERRED ROTATION (MDR)				
A. MDR With Spring Sheep Use in Both Pastures Rotating Two Treatments With Cattle (MDR-2)				
Hash Spring Allotment	5,746	1,430	---	4,316
TOTAL FOR MDR-2	5,746	1,430	000	4,316
B. MDR With Rotation of Use Periods in Five Pastures (MDR-5)				
Indian Allotment	35,348	35,348	---	---
TOTAL FOR MDR-5	35,348	35,348	000	000
VI. ANNUAL SPRING GRAZING WITHIN A SINGLE FENCED AREA (ALLOTMENT OR PASTURE) WITHIN A SPECIFIED TIME PERIOD (ASG)				
Black Buttes Allotment	49	23	---	26
"46" Allotment	208	208	---	---
Fricke Allotment	87	19	---	68
Poison Creek Allotment	269	---	---	269
Springdale Allotment	310	---	---	310
**Timmerman West Allotment Mahoney Flat Pasture	3,220	---	320	2,900
TOTAL FOR ASG	4,143	250	320	3,573
TOTAL FOR ALL GRAZING SYSTEMS	564,630	423,384	6,802	134,444

1/ Allotments with two asterisks (**) have two distinct types of grazing systems. The pastures to which the grazing system applies are entered under the allotment name. The other pastures in the allotment are entered after the allotment name under the type of grazing system that applies to them. One allotment has three asterisks(***). That allotment has three distinct types of grazing systems. For an explanation of grazing system categories see "Typical Systems Proposed" section in the narrative. Specific allotment and pasture locations are shown on Map 1-2.

The range improvements under this alternative for two allotments, Picabo and Timmerman East, would be similar to those proposed and analyzed under the Maximum Rehabilitation Alternative. The improvements would generally benefit the big game and upland game habitat but could adversely impact the small sedentary species. Benefits would result from the increase in understory vegetation (e.g., grasses and forbs), whereas adverse impacts would result from the actual land treatments (e.g., burning or seeding). It does not appear that the adverse impacts would be significant if the projects are properly designed and undertaken at the proper time.

Impacts on Big Game.

Mule Deer. Picabo is the only allotment in which impacts would occur differently than described for the Proposed Action. The season of grazing has been delayed an additional twenty days. This would nearly eliminate any conflict between the deer and cattle in the spring. However, while the spring opening date for livestock has been delayed, the fall closing date has been extended. The extended fall use could cause an increase in the livestock use of shrubs, which comprise a critical part of the deer's winter diet. The severity of this impact cannot be estimated at this time; however, if livestock use became significant, available winter forage would decline, causing a decline in animal condition and, eventually, reducing population numbers.

Elk. The impacts to elk would be similar to the Proposed Action.

Antelope. The impacts accruing from this alternative would benefit the antelope which summer within the Timmerman East Allotment. The prescribed burn would provide an increase in the amounts and kinds of forbs, which would significantly improve the habitat. However, the burn design must consider the fawning and fawn cover requirements of antelope that are satisfied by sagebrush islands. If sufficient numbers of islands were not maintained, the herds productivity could be reduced, and the susceptibility of the young to predators and disease could be increased.

Impacts on Small Mammals. Small mammals could be adversely impacted by the land treatment projects. Sedentary species residing within the boundaries of the prescribed burns would suffer an almost total elimination of cover and a very significant reduction in available food. This would result in decreased animal condition and increased vulnerability to predators.

The intensity of impacts from land treatments would depend upon the design and size of given treatment areas. Treatment areas less than 100 acres and having adjacent undisturbed brush would provide sources of food and cover for most animals with small home ranges. By designing projects with irregular shapes the "edge effect" would be maximized.

Impacts on Birds.

Sage Grouse. The impacts resulting from the grazing systems under this alternative would not be significantly different from those discussed for the Proposed Action. The only project which would cause significantly different impacts would be the prescribed burn proposed for the Timmerman East Allotment.

This burn would not impact any known sage grouse nesting habitat; however, it is conceivable that some unidentified grounds exist within the boundaries of the burn project, and these could be impacted. The significance of this impact would be dependent upon the measures undertaken during the preparation of the Environmental Assessment Record for each individual project. The burn would enhance the brood-rearing habitat by increasing the amounts and kinds of forbs.

Chukar Partridge, Hungarian Partridge, Pheasants, Quail, Doves. The impacts would be the same as described for the Proposed Action.

Waterfowl. The impacts would be the same as described for the Proposed Action.

Impacts on Treatened, Endangered, and Sensitive Wildlife. The impacts would be the same as described for the Proposed Action.

Summary. With one exception, the cumulative impacts from Alternative 5 would be the same as for the Proposed Action. Big Game and upland game bird population responses would be similar to the responses estimated for the Proposed Action.

Small mammals could decline slightly as a result of the proposed land treatment projects. However, if the treatment areas are small and irregularly shaped, the impacts would not be significant.

Impacts on Fisheries

The impacts resulting from this alternative are the same as those described for the Proposed Action (see Chapter 3, "Imapcts on Fisheries").

Impacts on Cultural Resources

Under this alternative, impacts to cultural resources would be similar to those expected under the Proposed Action on all but the Picabo and Timmerman East Allotments.

The allocation of forage and the proposed grazing systems in the five subject allotments would not have direct impacts on the known cultural resources. The proposed downward adjustments in the Davis Mountain, Macon Flat, Picabo, and Timmerman East Allotments would be beneficial in the sense that impacts from cattle trampling would be reduced slightly, although the fewer numbers would be partially offset by concentrations in the use pastures.

The land treatments proposed for the Picabo and Timmerman East Allotments could have adverse impacts to currently undiscovered cultural resource sites. Site-specific information (locations and significance) for these allotments is poorly developed at the present time. It should be noted, however, that cultural resource constraints for land treatment projects enumerated in Chapters 1 and 4 of this document should provide adequate protection for both known and unknown sites.

Impacts on Visual Resources

The five different grazing systems under this alternative would be more effective than those under the Proposed Action in improving vegetation conditions. However, the differences in impacts to visual resources would be insignificant. Likewise, construction of management facilities would not have a significant impact. On the other hand, land treatments (brush control and seeding) in the Picabo and Timmerman East Allotments could have a significant impact on visual resources, especially during the short term. Prescribed burning, chaining, and seeding would initially create obvious contrasts in the landscape. After vegetation became reestablished, the contrasts would decrease. In the long term, the vegetation would be improved, resulting in more variety and color in the landscape.

Impacts on Recreation Resources

The impacts from this alternative on recreation resources would be very similar to those described for the Proposed Action (see Chapter 3). The stocking rates for all except one allotment (Macon Flat would be significantly less) would be essentially the same as for the Proposed Action and would be generally much less than presently. Therefore, conflicts with grazing use would be relatively insignificant.

During the short term, prescribed burning, chaining, and seeding could disrupt recreational use in the Picabo and Timmerman East Allotments. In the long term, such projects could increase hunting opportunities and enhance enjoyment of sightseeing, hiking, and camping.

The fencing under this alternative, similar to that under the Proposed Action, could cause minor inconveniences relating to public access.

Impacts on Wilderness

The wilderness inventory and analysis described in Chapter 2 would continue unaffected by this alternative. No wilderness areas would be lost or impaired, because if areas having wilderness characteristics were identified, any conflicting activities would be restricted until Congress acts on designation of the areas.

Impacts on Livestock Grazing

This alternative would require a downward adjustment from 58,731 AUMs annual grazing use (1972-1976 average) to 36,673 AUMs, a 38 percent reduction. This compares to an initial stocking rate of 38,138 AUMs, a 35 percent reduction, with the Proposed Action. Forage available for livestock would decrease by 22,058 AUMs. This would adversely affect livestock grazing in both the short and long term. This alternative has socioeconomic implications, which are addressed in "Impacts on Socioeconomic Conditions."

The greatest individual downward adjustment from average licensed use (1972-1976) is 77 percent, while the greatest upward adjustment from average licensed use is 320 percent. Table 3-15 shows the adjustments in actual livestock grazing that would result from the Proposed Action (adjustment from average licensed use). These are identical to the adjustments under this alternative with the exception that Macon Flat would fall into the "71-77 Percent Downward Adjustment Proposed" category. See Table 8-32 for specific differences in the stocking rates between this alternative and the Proposed Action for Davis Mountain, King Hill, Macon Flat, Picabo, and Timmerman East Allotments. All others have stocking rates identical to the Proposed Action (see Chapter 3, "Impacts on Livestock Grazing).

Nineteen of the 112 livestock operators would not be adversely affected by the proposed adjustments in the level of livestock grazing based on their average licensed use. These operators would be allowed the use of more livestock forage under this alternative than was used over the past several years. The operators and the additional forage they would be allowed are included in Table 8-42 in the "Impacts on Socioeconomic Conditions" section.

Increased forage production would be expected over the next 15 years if this alternative is implemented (see "Impacts on Vegetation"). The increase, estimated to be 12,652 AUMs (expected total future production, 66,552 AUMs, minus total present production 53,900 AUMs) could be allocated to livestock at the end of fifteen years, provided that present big game numbers remain at or near present levels.

Even assuming no future production would be needed to satisfy increased big game forage demand, the 12,652 AUMs gained over the long term under this alternative would not compensate for the immediate short-term reduction of 22,058 AUMs. The long-term impact would, therefore, be a net deficit of at least 9,406 AUMs on the proposed allotments.

The reduced stocking rates under the Modified Proposal would result in the same benefits as the Proposed Action. The stocking rates would generally allow more forage for each grazing animal. Moreover, as vegetation condition improved, livestock would have a greater proportion of highly palatable and desirable forage species. Improved plant vigor would produce more abundant and accessible forage, and the quality of forage would improve. Improved forage quality would be expected to improve daily weight gains in calves and lambs, improve general health of breeding animals for higher conception and birth rates, and improve general animal vigor, thus improving overall performance and reducing death losses incurred from a wide variety of causes.

If this alternative is implemented, noxious weeds and poisonous plants would be expected to decrease in abundance over the long term. Fleece quality of sheep would improve from fewer sticky weed seeds such as cockleburr. Death losses from poisonous plants could decrease over the long term because most poisonings occur on areas depleted of palatable nutritious forage. Such areas would decrease over time.

The Modified Proposal calls for grazing systems that would require livestock to be moved regularly, more often, and in some cases, longer distances than presently. This would compel livestock to adjust to new terrain, water sources, and salt, and/or feed supplement locations. The adjustment process may have short-term effects on livestock performance, causing temporary reductions in weight gains. Over the long term, livestock performance would be expected to improve as vegetation condition improves and livestock become accustomed to being moved regularly.

As with the Proposed Action, the grazing systems would require more time and effort than present grazing. Changing the mode of operation, however, would not be a long-term adverse impact because operators would adjust to the new situation over a period of time.

Under both the Proposed Action and the Modified Proposal, several of the proposed grazing systems would be on new allotments formed by combining several existing allotments (Map 1-1). Combining existing allotments would significantly alter the present pattern of use, resulting in both adverse and beneficial effects, as discussed in Chapter 3, "Impacts on Livestock Grazing."

Similar to the Proposed Action, the resting of portions of a grazing allotment would concentrate cattle on the nonrested portions. Water sources would be heavily used, sometimes causing water shortages. Temporary water shortages at low-volume springs and favored troughs along pipelines would be common during hot summer days. This would not usually be a problem with surface waters such as streams, ponds, and reservoirs or with high-volume springs. Livestock operators would be directly affected by livestock concentration because more time would be spent ensuring the availability of water. This would constitute an immediate and long-term impact.

When concentrated in a smaller area, cattle may attempt to escape through newly constructed pasture fences until they become used to them. This is a short-term impact and would be expected to become negligible within a year or two after implementation of the grazing system.

Concentrated in use pastures during the first few years of the grazing cycle, livestock would graze less palatable forage than under present management where an entire allotment might be available for grazing. Through continual search for the most palatable forage, livestock would experience temporary weight loss. As forage production and quality improves, this impact would become negligible.

Concentration of livestock in use pastures could also cause some loss of livestock from poisonous plants for the first few years of a grazing cycle. This would be an adverse short-term impact until vegetation condition improves as a result of the proposed grazing system.

Beneficial impacts resulting from livestock concentration in use pastures would include improved vegetation vigor and reproduction of forage utilization. Overall, the concentration of livestock use into use pastures would be a long-term beneficial impact on livestock grazing, resulting from increased available forage.

Some grazing systems would require later turnout dates than at present. This would require holding livestock on private pastures or in feedlots later into the spring. Although the grazing season would be extended into the fall in most instances, this could result in a long-term adverse impact from increased feeding costs. In some cases, general animal health would temporarily suffer from remaining in feedlots or pastures longer in the spring, because warmer temperatures increase bacterial and fungal activity and lead to livestock disease problems.

The impacts on livestock grazing from the construction and use of the range improvements shown in Tables 8-33 and 8-34 would be generally beneficial. More watering places and improved water dependability would result from the proposed water developments. Management facilities, including fences, cattleguards, and stock trails would generally make livestock management easier. Fence maintenance represents an additional expense in time and money for livestock operators; however, cattleguards would facilitate the movement of ranch vehicles in some allotments without having to open and close gates. They would also reduce the incidence of gates being left open and the resulting livestock scattering. Stock trails would improve accessibility of areas not now easily reached for grazing.

The short-term effect of the proposed land treatments shown on Table 8-34 would be adverse because the areas would have to be protected from grazing until the desired vegetation became established. This would cause cutbacks in grazing use for a minimum of two years. The long-term effect for livestock grazing would be greater forage availability and improved dependability.

The Modified Proposal calls for 70 tracts of public land totaling 9,518 acres to be unallotted for livestock grazing (Table 1-3). On the adverse side, 52 tracts totaling 8,596 acres would be set aside for other uses such as wildlife, recreation, or cultural resource protection. This would result in a loss of 848 AUMs, which would be both a short- and long-term effect. On the beneficial side, four tracts totaling 297 acres would be used for stock trails, stock driveways, and livestock holding fields. Fourteen tracts totaling 625 acres would be incorporated into proposed allotments sometime within the fifteen year life of the proposal. Inclusion of the tracts would make an additional 88 AUMs available for livestock grazing.

In summary, forage quality and availability on a per-unit basis would improve. Forage from 13,780 acres of land treatments would provide more dependable yearly forage growth. The required downward adjustment on 30 allotments (comprising nearly three-fourths of the ES Area) would be an adverse long-term impact because 22,058 AUMs grazing use would be lost from proposed allotments, and 848 AUMs would be lost from proposed unallotted areas. Only 12,740 AUMs would be expected from increased production on the proposed allotments (12,652 AUMs) and addition of fourteen unallotted areas to the allotments (88 AUMs), creating a net long-term deficit of 9,318 AUMs.

This long-term adverse impact would affect 93 of the 1,072 ranches reporting during the 1974 Census of Agriculture (see Table 2-35). Thus, less than 9 percent of all livestock producers would be affected. Since the 1972-1976 average licensed use of 58,731 AUMs (Table 1-5) represents only about 2.2 percent of the livestock forage requirement of the five-county area (Chapter 2, "Livestock Grazing"), the proposed reduction would not have serious impacts on the total livestock industry. If public land AUMs were decreased by 22,058 it would represent 0.84 percent of the total AUM requirement for the livestock industry in the five-county area.

Impacts on Socioeconomic Conditions

Population. Population trends and levels would not differ significantly from those identified in Chapter 2, "Socioeconomic Conditions."

Employment. The livestock industry would realize a direct loss of twelve jobs as a result of implementing this alternative.

An additional four jobs would be lost to the five-county economy as a secondary impact of this alternative. The four lost jobs would be spread through four different sectors of the economy. The impacts are displayed in Table 8-41.

Income. Under this alternative the initial stocking rate would be 36,673 AUMs. This represents a reduction of 46,447 AUMs from active qualified demand and 22,058 AUMs from the five-year average licensed use. Individual adjustments from qualified demand would range from a loss of 4,174 AUMs to a gain of 137 AUMs. Individual adjustments from average use would range from a loss of 2,470 AUMs to a gain of 1,501 AUMs. Table 8-42 shows each operator in the ES Area and their active qualifications and average actual use. It also shows the adjustments in AUMs for each operator and percentage changes from both active and average use under this alternative. To compensate for reductions in grazing on public land, livestock operators would have to reduce herd size, buy or raise additional hay, convert irrigated pastureland, and/or buy or rent additional irrigated or dryland pasture.

The impact of this loss of AUMs would be a reduction in livestock and livestock-related income in the economic study area. The initial reduction would be $174,500 (22,058 AUMs times $7.91 income/AUM). The rancher with the largest loss from average use (2,470 AUMs) would lose $19,500 in income. The largest gain (1,501 AUMs) in income would be $11,900. The average loss (197 AUMs) would be $1,600.

These reductions in income would create secondary impacts throughout the study area. This secondary income loss would be $43,000 annually. Income loss by industry is shown in Table 8-43. The total loss of income, both primary ($174,500 in the livestock industry) and secondary ($43,000 throughout the entire economy) would total $217,500 annually. This compares with a total 1974 five-county income of $172,213,000 (see Chapter 2, "Socioeconomic Conditions"). Thus, as a result of implementing this alternative, approximately 0.1 percent of the total study area income would be lost. Total income losses in the livestock industry ($174,500 primary plus $6,000 secondary) would be $180,500 annually. This compares to the total 1974 study area farm income of $34,856,000 (see Chapter 2 "Socioeconomic Conditions"). Thus, the livestock industry losses from this alternative would be approximately 0.5 percent of the study area farm income.

In the long term, 12,740 AUMs could be restored to grazing use, making a total of 49,413 AUMs available for livestock. This would be 33,707 AUMs below the current active qualifications, and 9,318 AUMs below the 1972-1976 average actual use. Because operators could be licensed for more AUMs in the long term than immediately after implementation of the Proposed Action, income for the livestock operators would be partially restored. This potential increase would be 100,800 annually (12,740 AUMs x $7.91 income/AUM).

TABLE 8-41

SECONDARY EMPLOYMENT LOSSES
ALTERNATIVE NO. 5: MODIFIED PROPOSAL

INDUSTRY	NUMBER OF JOBS
AGRICULTURE	
Livestock (Except Dairy-Poultry)	1
Other Agriculture	0
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other Mining	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	1
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other Manufacturing	1
TRANSPORTATION AND COMMUNICATION	0
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	1
FINANCE, INSURANCE, REAL ESTATE	0
SERVICES	0
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	4

Source: Bureau of Land Management, Idaho State Office,
Dynamic Regional Analysis Model (DYRAM),
January 1979

TABLE 8-42

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA UNDER ALTERNATIVE 5

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS				DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
				FROM ACTIVE GRAZING QUALIFICATIONS		FROM FIVE YEAR AVERAGE LICENSED USE		
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Adams, Charlie	122	124	51	-71	-58	-73	-59	6
Alexander, Eugene	105	105	23	-82	-78	-82	-78	17
Allen, Bud	237	290	88	-149	-63	-202	-70	16
Allen, Richard & Sharon	51	31	19	-32	-63	-12	-39	9
Arkoosh & Zidan	3629	2052	1582	-2047	-56	-470	-23	15
Armstrong, Forest	464	385	102	-362	-78	-283	-74	32
Astorquia, Josephine	1606	839	768	-838	-52	-71	-8	21
Baldwin, Clyde	61	36	49	-12	-20	+13	+36	10
Baldwin, J.D.	150	135	19	-131	-87	-116	-86	12
Baldwin, L.W.	417	374	121	-296	-71	-253	-68	14
Bancroft, Paul	514	476	176	-338	-66	-300	-63	42
Bauscher Ranch	807	603	215	-592	-73	-388	-64	15
Bellamy, Don	482	237	207	-275	-57	-30	-13	50
Bilboa, Alex	594	514	313	-281	-47	-201	-39	39
Braun, Gordon	83	83	60	-23	-28	-23	-28	3
Bray, Sterling & Ada	1031	507	351	-680	-66	-156	-31	34
Breckenridge, L.L.	2960	373	1874	-1086	-37	+1501	+402	12
Broadie, Lester	261	215	136	-125	-48	-79	-37	14
Brown, Evan J.	326	380	390	+64	+20	+10	+3	38
Brown, John, Inc.	1005	347	610	-395	-39	+263	+76	25
Browning, Charlie	90	27	57	-33	-37	+30	+111	4
Burman Grazing Assn.	815	814	179	-636	-78	-635	-78	14
Butler, Dale T.	483	362	208	-275	-57	-154	-43	23
Byce, James W.	183	208	68	-115	-63	-140	-67	3
Byrum, Gary	272	238	117	-155	-57	-121	-51	14
Calarco Cattle	2912	2459	874	-2038	-70	-1585	-64	24
Campbell L & L	1720	745	664	-1056	-61	-81	-11	10
Castle, James C.	88	82	61	-27	-31	-21	-26	13
Chambers, Ferrel	4	1	2	-2	-50	+1	+100	* 2/
Circle Hanging H	83	71	58	-25	-30	-13	-18	7
Clark, Wayne	876	759	534	-342	-39	-225	-30	18
Coiner & Sons	23	1	15	-8	-35	+14	+1400	* 2/
Connell, Sanford	182	182	40	-142	-78	-142	-78	8
Connell, William	47	46	10	-37	-79	-36	-78	5
Croft Construction Co.	228	141	29	-199	-87	-112	-79	13
Depew, George	30	30	7	-23	-77	-23	-77	1
Double D. Ranch	293	335	351	+58	+20	+16	+5	12
Drum, E.E.	496	320	208	-288	-58	-112	-35	39
Faught, Waldo	39	30	9	-30	-77	-21	-70	7
Faulkner L & L	8329	6023	4155	-4174	-50	-1868	-31	28
Flying Triangle	1302	615	758	-544	-42	+143	+23	12
Fredrickson, J.E.	240	195	146	-94	-39	-49	-25	18
Freeman, J.E.	345	345	76	-269	-78	-269	-78	16
Gardiner, C.W. & Sons	255	254	69	-186	-73	-185	-73	3
Guthrie, Evan	275	209	117	-158	-57	-92	-44	8
Haga, Marguerite	1004	611	397	-607	-60	-214	-35	42
Hansen, C.M.	26	73	52	+26	+100	-21	-29	2
Hansen, Mark	1164	999	275	-889	-76	-724	-72	9
Hess, Leroy	100	98	34	-66	-66	-64	-65	33
Iest, C. Estate	1026	1026	462	-564	-55	-564	-55	8
Johnson, Wendell	694	782	831	+137	+20	+49	+6	12
Jones, Waldo	356	316	150	-206	-58	-166	-53	3
Jones & Sandy	3506	1292	1733	-1773	-51	+441	+34	35
Karstetter, G.W.	138	138	46	-92	-67	-92	-67	3
Kast C Y Cattle Co.	3342	3635	1165	-2177	-65	-2470	-68	14
Kast, Mike	173	173	52	-121	-70	-121	-70	16
Kerner, Gilbert	241	230	101	-140	-58	-129	-56	38
Kerner, Oscar	338	316	142	-196	-58	-174	-55	26
Kevan, James	23	23	14	-9	-39	-9	-39	1
Kinney, Victor	413	382	228	-185	-45	-154	-40	13
Krahn, Ben	572	305	164	-408	-71	-141	-46	19

TABLE 8-42 Continued

ADJUSTMENTS IN GRAZING AND YEARLY LIVESTOCK FORAGE DEPENDENCY FOR INDIVIDUAL OPERATORS WITHIN THE SHOSHONE ES AREA UNDER ALTERNATIVE 5

OPERATOR NAME	ACTIVE FEDERAL GRAZING 1/ QUALIFICATIONS	1972-1976 AVERAGE LICENSED USE	PROPOSED LIVE-STOCK INITIAL STOCKING RATE	REQUIRED ADJUSTMENTS				DEPENDENCY ON PUBLIC LAND FORAGE WITHIN SHOSHONE ES AREA 1/
				FROM ACTIVE GRAZING QUALIFICATIONS		FROM FIVE YEAR AVERAGE LICENSED USE		
	AUMs	AUMs	AUMs	AUMs	Percent	AUMs	Percent	Percent
Leavell Cattle Co.	2026	1036	480	-1546	-76	-556	-54	3
Leeper, E.L.	25	25	14	-11	-44	-11	-44	5
Lockwood L & L	373	346	157	-216	-58	-189	-55	18
Luther, Charles	305	225	132	-173	-57	-93	-41	4
M & S Company	116	133	70	-46	-40	-63	-47	1
Meyers, Samuel	15	17	7	-8	-53	-10	-59	1
Miller, Ilene	105	105	41	-64	-61	-64	-61	26
Mink, Inc.	472	422	203	-269	-57	-219	-52	11
Mitchell, Earl	33	33	12	-21	-64	-21	-64	19
Molyneux, A.W.	298	335	357	+59	+20	+22	+7	16
Moody, G. & Sons	869	672	243	-626	-72	-429	-64	41
Nielson, Morris	42	40	19	-23	-55	-21	-53	6
Norman, Karl O.	68	68	47	-21	-31	-21	-31	10
North Fork Ranch	132	1	69	-63	-48	+68	+6800	5
Oneida Farms, Inc.	312	131	218	-94	-30	+87	+66	6
Osborne, Dwight	1697	888	219	-1478	-87	-669	-75	57
Parke, John	476	247	173	-303	-64	-74	-30	38
Patterson, Manning	1649	1097	872	-777	-47	-225	-21	21
Pauls, Gayland	464	372	200	-264	-57	-172	-46	10
Pendleton, Charles	1200	788	435	-765	-64	-353	-45	43
Phelps, F.F.	2779	2368	1960	-819	-71	-1572	-66	39
Picabo Livestock	1268	899	342	-926	-73	-557	-62	5
Pugmire, Marion	426	334	145	-281	-66	-189	-57	23
Quarter Circle Lazy H	549	581	214	-335	-61	-367	-63	13
Reeder, Glen	90	89	62	-28	-31	-27	-30	11
Reedy, Carrie L.	643	466	180	-463	-72	-286	-61	25
Renner, Lawrence	340	213	95	-245	-72	-118	-55	19
Richteron, Inc.	348	402	417	+69	+20	+15	+4	14
Ritter, James B.	212	121	47	-165	-70	-74	-61	9
Riley, Carl	314	314	69	-245	-78	-245	-78	16
Ruiz, Bernardo	160	1	35	-125	-78	+34	+3400	5
Salmon Falls Sheep Co.	392	263	202	-190	-48	-61	-23	4
Sandy Brothers	612	435	257	-355	-58	-178	-41	22
Saody, Donald	64	62	27	-37	-58	-35	-56	35
Sant, Evert	639	599	268	-371	-58	-331	-55	34
Scheer, Jack	238	72	42	-196	-82	-30	-41	11
Schmidt Brothers	570	360	74	-496	-87	-286	-79	6
Schoessler, Carl	54	54	15	-39	-72	-39	-72	3
Sliman & Guthrie	676	337	294	-382	-57	-43	-13	19
Sliman Sheep Co.	3751	2468	1807	-1944	-52	-661	-27	26
Sorenson, Gordon	129	131	77	-52	-40	-54	-41	2
Spring Cove Ranch	705	784	191	-514	-73	-593	-76	21
Struthers, Robert J.	253	263	167	-86	-34	-096	-37	* 2/
Stevenson, John	196	185	159	-37	-19	-026	-14	16
Stutzman, Clifford	458	416	192	-266	-58	-224	-54	32
Tews, Lawrence	5	3	2	-3	-60	-1	-33	1
Thomas, Charles	433	279	182	-251	-58	-97	-35	33
Tschannen, Josephine	284	213	97	-187	-66	-116	-54	22
Varin, John	576	502	248	-328	-57	-254	-51	12
Varin, William	510	464	214	-296	-58	-250	-54	28
Vaughn Brothers	123	1	27	-96	-78	+26	+2600	29
Yore Cattle Co.	5253	3740	1271	-3982	-76	-2469	-66	29

1/ AUMs and dependency based on the present situation as of January 1978. All numbers have been rounded.
2/ Less than one percent.

Source: Bureau of Land Management, Idaho State Office

TABLE 8-43

SECONDARY INCOME LOSSES BY INDUSTRY
ALTERNATIVE NO. 5: MODIFIED PROPOSAL

INDUSTRY	AMOUNT
AGRICULTURE	
Livestock	$ 6,300
Other	4,900
MINING	
Metal	0
Coal	0
Oil and Gas	0
Other	0
CONTRACT CONSTRUCTION	0
MANUFACTURING	
Food and Kindred Products	6,600
Lumber and Wood Products	0
Paper and Allied Products	0
Petroleum Refining	0
Primary Metals	0
Other	6,600
TRANSPORTATION AND COMMUNICATION	6,400
PUBLIC UTILITIES	0
WHOLESALE AND RETAIL TRADE	6,400
FINANCE, INSURANCE, REAL ESTATE	2,600
SERVICES	3,500
GOVERNMENT	
Federal	0
State and Local	0
AREA SUMMARY	$43,300

Source: Bureau of Land Management, Idaho State Office,
Dynamic Regional Analysis Model (DYRAM),
January 1979

Other industries in the area would also benefit from this long-term gain by the livestock industry. As a result, the total annual income increase could be as much as $125,900 throughout the economy, including livestock (DYRAM Model, BLM 1978). The net result after fifteen years would be a $91,600 reduction ($217,500 less $125,900) in annual income throughout the economy of the five-county area. This would represent a 0.05 percent net long-term change in five-county income.

Social Values and Attitudes. The social impacts resulting from this alternative would be the same in kind as for the proposed action. Any variation would be in degree of intensity and this cannot be quantified.

SUMMARY

The Proposed Action for this ES is described and analyzed in Chapters 1 and 3, respectively. In this chapter, five alternatives (No Change, Discontinue Livestock Grazing, Lower Level Stocking, Maximum Rehabilitation, and Modified Proposal) are described and analyzed individually. At the beginning of this chapter, Tables 8-1, 8-2, and 8-3 compare the initial stocking rates, grazing systems, and range improvements, respectively, for the Proposed Action and all the alternatives. To also provide a comparison of impacts and/or expected future conditions under the proposed action and all alternatives, Table 8-44 summarizes the significant long-term impacts by resource components.

TABLE 8-44

COMPARATIVE SUMMARY OF LONG TERM IMPACTS FOR RESOURCE COMPONENTS
EXPECTED FUTURE SITUATION AFTER 15 YEARS

RESOURCE OR ELEMENT IMPACTED	PRESENT SITUATION	PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5
			NO CHANGE	DISCONTINUE LIVESTOCK GRAZING	LOWER LEVEL STOCKING	MAXIMUM REHABILITATION	MODIFIED PROPOSAL
SOILS							
Surface Acres Disturbed (Short Term) 1/	0	6,109	0	0	6,109	87,653	13,780
Surface Acres Disturbed (Long Term)	0	220	0	0	220	430	225
Erosion Rate (ac ft/sq mi/yr)	1.00	0.95	1.00	0.84	0.89	0.93	0.93
Erosion Rate Change (Percent from Present)	0	-5	0	-16	-11	-7	-7
WATER RESOURCES							
Water Consumption (Acre Feet)	100	80	100	20	40	80	78
Equalized Return Period to Produce 10 Yr. Flood	10	13	10	14	13	13	13
Erosion Rate Near Important Waters (ac ft/sq mi/yr)	1.12	1.03	1.12	0.92	0.98	1.03	1.03
VEGETATION							
Condition (Acres)							
Seeding	36,878	44,022	34,439	41,952	43,859	91,300	44,202
Brush Control	30,476	15,157	28,180	28,180	31,720	47,092	22,347
Highly Disturbed	38,379	10,755	43,891	16,639	14,986	2,974	10,755
Poor	234,931	226,672	238,751	175,443	205,870	164,928	211,274
Fair	186,157	223,156	182,647	246,236	221,142	214,276	229,893
Good	37,809	44,868	36,722	56,180	47,053	47,708	46,159
Trend in Condition							
Upward	11,650	378,742	40,009	529,705	360,664	194,293	423,384
Downward	124,450	22,126	227,720	0	11,704	32,764	6,802
Static	428,530	163,762	296,901	34,925	192,262	341,221	134,444
Production 2/							
Total Pounds	402,900,000	406,900,000	398,900,000	411,000,000	408,900,000	405,900,000	407,900,000
Total Lbs Allocable to Grazing Animals	43,120,000	50,608,800	41,724,000	54,904,800	54,831,200	54,340,800	53,241,600
Total AUMs Allocable to Grazing Animals	53,900	63,351	52,155	68,631	68,539	67,926	66,552
Percent of Total Production	11	12	10	13	13	13	13
WILDLIFE (TERRESTRIAL)							
Species.							
Elk (Number of Animals)	80	404	60-80	420-460	410-430	384-424	384-424
Mule Deer Residents (Numbers)	360	1,277	290-350	1340-1460	1310-1370	1217-1337	1217-1337
Mule Deer Migrant (Numbers)	1,903	3,704	1530-1910	3810-3970	3800-3980	3624-3784	3624-3784
Antelope (Numbers)	67	165	50-70	170-190	170-190	155-175	155-175
Upland Birds (Nests)	x	x±60%	x-5%	x+65%	x±60%	x±5%	x±60%
Waterfowl (Nests)	x	x±5%	*	x±60%	x±25%	x+5%	x±5%
WILDLIFE (AQUATIC)							
Habitat by Condition Class							
Poor (Miles/Percent)	15/21	12/17	Same as P.A.	0	Same as P.A.	Same as P.A.	Same as P.A.
Fair (Miles/Percent)	14/20	14/20		15/21			
Good (Miles/Percent)	41/59	44/63		55/79			
CULTURAL							
Known Sites Disturbed and/or Destroyed	265 of 308	262 of 308	Same as P.A.	70 of 308	Same as P.A.	275 of 308	Same as P.A.
VISUAL (CONTRAST RATINGS) 3/							
Livestock Grazing	15	12	15	0	9	17	12
Facilities	10	13	10	0	13	13	13
Land Treatments	0	26	0	0	23	33	28
WILDERNESS VALUES	Protected by law	Protected by law	Same as P.A.	No Impact	Same as P.A.	Same as P.A.	Same as P.A.
LIVESTOCK GRAZING							
Initial Stocking Rate (AUMs)	58,731	38,138	58,731	0	19,147	40,443	36,673
Initial Adjustment from 1972-76 Average (Percent)	0	-35	0	-100	-67	-30	-38
Allowable Stocking Rate in 15 Years 5/	0	47,677	52,155	0	33,874	54,557	49,413
ECONOMICS							
Total Cost of Range Improvements & Land Treatments ($)	0	665,349	0	0	665,349	1,937,196	712,987
Cost/AUM Gained ($)	0	70	0	0	45	138	56
Net Annual Income Loss to 5-County Economy ($) 6/	0	109,250	52,000	580,290	245,100	41,660	91,600
Individual Rancher Average Income Loss ($) 6/	0	785	390	4,430	1,822	342	675
Total Jobs Lost 6/	0	8	4	43	18	3	5

1/ Short-term disturbance is shown to indicate magnitude of short versus long-term impacts.
2/ Forage production would not be allocated to livestock alone.
3/ Generalized visual contrast ratings are shown for the three major cause agents. Higher numbers indicate greater contrasts (more visual impact).
4/ Wilderness values are protected by Section 603(c), Federal Land Policy and Management Act (PL 94-579).
5/ Increased forage production could be allocated to livestock alone, assuming present wildlife numbers remained constant.
6/ Based on 1977 dollars, 1977 employment situation, and assuming the other variables remain constant, and AUMs grained could be restored.

CHAPTER 9

CONSULTATION AND COORDINATION

TEAM ORGANIZATION

The Shoshone ES Team was formed on September 11, 1978, at the Bureau of Land Management District Office in Shoshone, Idaho. Both District and State Office personnel were involved. The team consisted of resource specialists in vegetation, livestock grazing, soils, water resources, wildlife, cultural resources, recreation, wilderness, visual resources, and socioeconomics.

CONSULTATION AND COORDINATION IN PREPARATION OF THE PROPOSED ACTION

Numerous consultation efforts were undertaken prior to the team's assembly. In May of 1975 and again in May of 1976 informal meetings were held with governmental and public audiences in attendance. At these meetings the various Management Framework Plans (MFPs) were explained and discussed. Conflicts and proposed recommendations were presented, and the views expressed by the audiences were recorded and documented. Letters containing maps and ES Area information were sent to various interested parties and agencies requesting information or recommendations that might be incorporated into the MFPs. Substantive comments were taken under consideration by BLM personnel. The Magic MFP was finalized in 1975, and the Bennett Hills and Timmerman Hills MFP was finalized in 1976.

Based on final MFP recommendations, draft grazing systems were designed during 1976 and 1977. Numerous meetings were held between BLM personnel and individual users or user groups to explain the proposed grazing systems and attempt to adapt them, where feasible, to future plans and needs. Several related meetings were held in the Shoshone District Office to explain the environmental statement process and its significance. Recommendations and comments for designing grazing systems were solicited from individuals and user groups and, although very limited in number, the responses reflected a great deal of interest and effort. All comments were considered, and recommendations were adopted if they were consistent with the management objectives. Alternative 4, Maximum Rehabilitation, is in part a direct result of these various meetings and contacts.

The draft grazing systems will remain unsigned until a final decision is made on which management option or combination of options will be used in the ES Area. That decision will be made by BLM officials after environmental impacts and other considerations have been thoroughly analyzed.

Certain aspects of resource management are covered by memoranda of agreement or understanding between BLM and County, State, and other Federal agencies.

CONSULTATION AND COORDINATION IN PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

On March 16, 1978, a news release was distributed to the media throughout Idaho announcing the beginning of the Shoshone ES preparation and requesting further public input. At the same time, letters and explanatory material were sent to ES Area livestock operators and other individuals; wildlife, environmental, and livestock interest groups; other Federal agencies; State and local agencies; and Congressional Delegations, inviting them to take part in the ES process by supplying information and comments.

Several individuals with special expertise were consulted prior to preparation of the draft environmental statement. Informal consultation was carried out between the BLM District Office and the U.S. Fish and Wildlife Service in compliance with Section 7 of the Endangered Species Act of 1973. The State Historic Preservation Officer was contacted regarding the proposal in compliance with Section 106 of the National Historic Preservation Act.

The proposed action and alternatives are only tenative at this time and subject to modification based on further public comment. Formal public hearings will be held in Shoshone and Boise, Idaho, but firm dates have not yet been set. Notices will be forthcoming stating dates, locations, and times of these hearings.

COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

Copies of the draft environmental statement will be available for public inspection at the BLM Shoshone District Office, 400 West F Street, Shoshone, Idaho, and at the BLM Idaho State Office, 550 West Fort Street, Boise, Idaho.

Copies of the draft environmental statement will be sent with requests for comments to the following agencies, interest groups, and individuals:

1. Federal Agencies

Environmental Protection Agency
National Advisory Council on Historic Preservation
Department of Agriculture
    U. S. Forest Service
    Soil Conservation Service
    Agriculture Stabilization and Conservation Service
Department of the Interior
    U. S. Fish and Wildlife Service
    Heritage, Conservation and Recreation Service
    U. S. Geological Survey
    Bureau of Reclamation
    Bureau of Indian Affairs
    National Park Service

2. State Agencies

Governor's Clearinghouse

3. Local Government

Blaine, Camas, Elmore, Gooding, and Lincoln County Commissioners and Planning and Zoning Commissions
Mayors of Bliss, Fairfield, Gooding, Richfield, and Shoshone
Local County Agents

4. Organizations

Pacific Legal Foundation
Natural Resources Defense Council (NRDC)
Public Lands Council
The Wildlife Society
National Wildlife Federation
Twin Falls Fish and Wildlife Club
Greater Snake River Land Use Congress (Outdoors Unlimited)
Idaho Environmental Council
Carey Act Development Association
Sierra Club
League of Women Voters
Ada County Fish and Game League
The Nature Conservancy

Magic Valley Trail Machine Association
Northside Snow Riders
Idaho Conservation League
Environment West
State Historic Preservation Officer
The Wilderness Society
Idaho Cattle Feeders Association, Inc.
VFW Canyon Committee
Trout Unlimited, Inc.
Council for Agricultural Science and Technology (CAST)
Idaho Chapter of American Fisheries Society
Idaho Historical Society
Society for Range Management
The Izaak Walton League of America
National Audubon Society
Idaho Woolgrowers Association
Idaho Cattlemen's Association
Idaho Mining Association
Idaho Archaeology Society
Macon Flat Cattle Association
Shoshone Cattle Association
Black Canyon Cattle Association
Thorn Creek Cattle Association
Richfield Cattle Association
Idaho Farm Bureau Federation

5. Commercial Companies

Big Wood Canal Company
Idaho Power Company
Mountain Bell Telephone Company

6. Educational Institutions

University of Idaho
Idaho State University
Boise State University
Northwestern University
Utah State University
Northern Illinois University

7. Congressional Delegations

Office of Senator Church
Office of Senator McClure
Office of Congressman Hansen
Office of Congressman Symms

8. State Legislators

Senator John Bell
Senator J. Wilson Steen
Senator Kenneth Bradshaw
Hon. Steve Antone
Hon. Dan Kelly
Hon. Virgil Kraus
Hon. Gordon Hollifield
Hon. Mac Meibaur

9. Individuals

Shoshone ES Area Livestock Operators
Others

APPENDIX 1

ALLOCATION OF FORAGE

The available forage within the Shoshone ES Area was allocated as a direct result of the resource management recommendations and decisions, as follows:

Sixty percent of the palatable perennial grasses, forbs, and shrubs, and 20 percent of the palatable annual grasses, were allocated to the grazing animals (livestock and big game), whereas the remaining palatable, perennial and annual vegetation, in addition to all unpalatable species were reserved for watershed protection and wildlife habitat. All study data, research references, and detailed methodology supporting this forage allocation method are on file and available for inspection at the BLM Shoshone District Office.

INVENTORY PROCEDURES

The following interrelated inventories and procedures were conducted before forage was allocated within the ES Area.

Soil Survey

A third-order soil survey was conducted throughout the ES Area. The survey was conducted by the Soil Conservation Service (SCS) and was closely coordinated with the vegetation sampling procedures.

Ecological Site Survey

A modified SCS Ecological Site Survey was used to evaluate present and potential vegetation production. This survey identified and delineated areas exhibiting similar forage production potential (ecological sites or range sites). Fifteen sites were identified and mapped within the ES Area.

Ecological Site Condition Survey

Although similar ecological sites exhibit similar potential forage production capabilities, existing production for a given ecological site varied across the ES Area because of differing site conditions. To categorize areas of similar present production, the existing site conditions for the entire ES Area were mapped. Four categories, good, fair, poor, and highly disturbed (very poor), were used to describe ecological conditions on the sites. Normally, the excellent category is also used, but no lands in the ES Area were classified as excellent. Each condition class was defined relative to the potential natural plant community for the ecological site under consideration. The good category was defined as having 51-75 percent of the plant composition and production found in the potential natural plant community. The fair class had 26-50 percent, and the poor class had less than 25 percent of the potential community. The highly disturbed condition class (very poor) represented an extreme departure from the potential natural plant community; even native indicator shrubs were missing.

Vegetation Sampling

After the ecological sites were identified and mapped, and ecological condition classes were overlain on the sites, several vegetation sampling plots were established on each combination of ecological site and condition class throughout the ES Area.

The plots were comprised of ten individual 9.6 square foot subplots from which production was estimated. An ocular weight-estimate method was used to determine existing production by species. Production was estimated on all ten subplots, and then two were randomly selected and clipped. The clipped material was weighed and the data were used to correct the estimates. Samples were later dried and weighed again to correct for moisture content and to obtain dry-weight figures. Utilization cages were erected on sample plots to derive a correction factor for the plots that were grazed prior to sampling.

Suitability Survey

Suitable areas, as defined in the text of the ES, produce more than 25 pounds of palatable forage per acre, are within four miles of water, and do not exceed 50 percent slope. The ES Area was surveyed using these criteria, and all areas that did not meet the suitability requirements were mapped and classified as unsuitable for livestock grazing.

Big Game Survey

In order to allocate forage to big game, an estimate of their numbers was made. Estimates were made by district wildlife personnel using the most recent aerial trend count data from the Idaho Department of Fish and Game. The estimated population numbers were agreed upon by the Idaho Department of Fish and Game and BLM district personnel.

ALLOCATION CRITERIA

The following criteria were generated during the district's resource management planning process in order to promote multiple use and enhance all identified resource values:

1. The grazing animals (i.e., big game and livestock) should not utilize more than 60 percent of the average yearly available palatable forage.
2. Production of annual grass (e.g., cheatgrass) sustains large yearly fluctuations; consequently, no more than 20 percent of the average production should be allocated as forage.
3. Vegetation in rested pastures (not grazed by livestock) is not available and, therefore, should not be allocated to livestock.
4. Vegetation produced on unsuitable areas is not considered available for livestock. However, if an unsuitable area is known to be used by big game, wildlife forage should be credited to the unsuitable area.
5. An animal unit month (AUM) (the forage needed to sustain one cow for one month) should be composed of 800 pounds of palatable forage. Additionally, 500 pounds of forage should be provided for each elk per month, 200 pounds per deer per month, and 150 pounds per antelope per month.
6. For allocation purposes, only the plants listed in Table A1-1 should be considered palatable to livestock and wildlife.
7. Due to dietary differences between big game and livestock, deer winter and summer diets should be considered 20 percent and 10 percent noncompetitive with livestock, respectively. Antelope yearlong diets should be considered 15 percent noncompetitive with livestock. Because elk diets are so similar to livestock, no part of their diet should be considered noncompetitive.

TABLE A1 - 1

PALATABILITY OF SPECIES
IN THE SHOSHONE DISTRICT 1/

SCIENTIFIC NAME	COMMON NAME	PALATABILITY 2/	
		LIVE-STOCK	WILD-LIFE
Achillea millifolium	Common yarrow	U	P
Agoseris spp.	Agoseris	P	P
Agropyron cristatum	Fairway crested wh.gr.	P	P
Agropyron dasystachyum	Thickspike wheatgrass	P	P
Agropyron intermedium	Intermediate wheatgrass	P	P
Agropyron riparium	Streambank wheatgrass	P	P
Agropyron saxicola	Foxtail wheatgrass	P	P
Agropyron smithii	Western wheatgrass	P	P
Agropyron spicatum	Bluebunch wheatgrass	P	P
Allium acuminatum	Tapertip onion	P	P
Allium Lemmonii	Lemmons onion	P	P
Amelanchier utahensis	Utah serviceberry	P	P
Antennaria microphylla	Pussytoes	U	P
Antennaria rosea	Rose Pussytoes	U	P
Arabis spp.	Rockeress	P	P
Arenaria spp.	Sandwort	U	P
Aristida longiseta	Three awngrass	P	P
Artemisia arbuscula	Low sagebrush	U	P
Artemisia longiloba	Alkali sagebrush	U	P
Artemisia tridentata	Big sagebrush		
Var. wyomingensis	Wyoming big sagebrush	U	P
Astragalus atratus	Mourning milkvetch	U	P
Astragalus beckwithii	Beckwith milkvetch	U	P
Astragalus stenophyllus	Hangingpod milkvetch	P	P
Balsamorhiza hookeri	Hooker balsamroot	P	P
Balsamorhiza sagittata	Arrowleaf balsamroot	P	P
Bromus japonicus	Japanese brome	P	P
Bromus tectorum	Cheatgrass brome	P	P
Carex spp.	Sedge	P	P
Crepis acuminata	Tapertip hawksbeard	P	P
Danthonia unispicata	Onespike danthonia	P	P
Elymus cinereus	Basin wildrye	P	P
Erigeron spp.	Fleabane	U	P
Erodium cicutarium	Storksbill	P	P
Eriogonum caespitosum	Matted eriogonum	U	P
Eriogonum heracleoides	Wyeth eriogonum	P	P
Eriogonum ovalifolium	Cushion eriogonum	U	P
Eriogonum umbellatum	Sulfur eriogonum	U	P

TABLE A1 - 1 Continued

PALATABILITY OF SPECIES
IN THE SHOSHONE DISTRICT 1/

SCIENTIFIC NAME	COMMON NAME	PALATABILITY 2/	
		LIVE-STOCK	WILD-LIFE
Festuca idahoensis	Idaho fescue	P	P
Festuca octoflora	Sixweeks fescue	P	P
Gilia aggregata	Skyrocket filia	U	P
Grayia spinosa	Spiny hopsage	P	P
Hordeum jubatum	Foxtail barley	P	P
Koeleria cristata	Prairie junegrass	P	P
Lactuca serriola	Prickly lettuce	P	P
Lithophragma parviflora	Smallflower woodland star	P	P
Lagophylla ramosissima	Branched lagophylla	U	P
Lomatium spp.	Biscuitroot	P	P
Lupinus leucophylus	Velvet lupine	P	P
Lupinus sericeus	Silky lupine	P	P
Melica bulbosa	Bulbous oniongrass	P	P
Mertensia longiflora	Small bluebells	P	P
Mertensia Oblongifolia	Oblongleaf bluebells	P	P
Minulus nanus	Dwarf monkeyflower	U	P
Oryzopsis hymenoides	Indian ricegrass	P	P
Oryzopsis webberi	Weber ricegrass	P	P
Penstemon spp.	Penstemon	U	P
Phlox hoodii	Hoods phlox	U	P
Phlox longifolia	Longleaf phlox	U	P
Poa nevadensis	Nevada bluegrass	P	P
Poa sandbergii	Sandberg bluegrass	P	P
Potentilla glandulosa	Gland cinquefoil	U	P
Potentilla gracilis	Northwest cinquefoil	U	P
Purshia tridentata	Antelope bitterbrush	P	P
Senicio intergerrimus	Lambstongue groundsel	U	P
Senecio serra	Butterweed groundsel	P	P
Stanion hystrix	Bottlebrush squirreltail	P	P
Stipa occidentalis	Western needlegrass	P	P
Stipa thurberiana	Thurber needlegrass	P	P
Tragopogon dubious	Yellow salsify	P	P
Viola beckwithii	Beckwith violet	P	P

1/ Only the plant species that are palatable for either livestock or wildlife are listed.

2/ P-Palatable; U-Unpalatable.

ALLOCATION METHODOLOGY

The inventory procedures, in conjunction with the above criteria, led to the formulation of the allocation of vegetation for the various resource values.

From the vegetation sampling of each ecological site/condition, and the list of palatable species, total palatable species production was calculated in pounds per acre of palatable perennial and annual forage for that site/condition.

The perennial forage production figure was then multiplied by 60 percent and the annual forage production figure by 20 percent to account for the utilization limits set by the resource management plan. The results were multiplied by the number of acres represented by the site/condition and divided by 800 lb/AUM to convert the pounds into AUMs per site/condition. The AUMs produced in each area were then summed to determine the total AUMs produced within pastures and allotments. If unsuitable areas were identified, the AUMs were tabulated separately by suitability. The AUMs of forage produced on suitable areas was called the Inventoried Grazing Capacity.

After computing the Inventoried Grazing Capacity for an allotment, the total number of AUMs necessary to satisfy the big game demand was calculated, based on the species present, their numbers, and the length of time spent in the applicable allotment. Competitive big game AUMs were determined by dietary considerations. A determination was made as to whether any of the competitive big game AUMs could be assigned to unsuitable areas within the allotment. If unsuitable areas existed and wildlife were known to inhabit them, a designated number of competitive big game AUMs (the number determined by the wildlife biologist) was assigned to the unsuitable areas. These AUMs were subsequently referred to as noncompetitive. The remaining competitive AUMs were subtracted from the Inventoried Grazing Capacity. The forage available after the big game AUMs were subtracted was referred to as the Livestock Grazing Capacity.

Once the big game demand was satisfied, the forage available for livestock (Livestock Grazing Capacity) was analyzed relative to the proposed grazing system. If there were periods of yearlong rest designed into the system, the forage produced in the rested pasture(s) was subtracted from the Livestock Grazing Capacity. The forage (AUMs) that remained following the allowance for the rested pasture was called the Initial Stocking Rate. That number of AUMs determined the initial number of livestock proposed to graze the allotment during the assigned grazing season.

The following example shows the procedures used to arrive at the Initial Stocking Rate in a hypothetical allotment in the ES Area.

FORAGE ALLOCATION EXAMPLE
FOR GREEN SPRINGS ALLOTMENT

The Green Springs Allotment is a hypothetical allotment comprised of three pastures (numbered 1, 2, and 3), including three ecological sites (North Slope, South Slope, and Loamy), and representing three ecological condition classes (good, fair, and poor). A portion of Pasture 1 is rated as unsuitable; the remainder of the allotment is suitable for livestock grazing. Approximately 100 wintering deer and 15 resident elk inhabit the allotment, and a three-treatment rest-rotation grazing system was selected for livestock management.

Forage Production of Ecological Site/Condition

Based on vegetation sampling, the following average forage production was determined for each ecological site/condition:

1. North Slope/good condition: 1,011 pounds of perennial and 15 pounds of annual palatable forage per acre.
2. Loamy/fair condition: 340 pounds of perennial and 20 pounds of annual palatable forage per acre.
3. Loamy/poor condition: 203 pounds of perennial and 15 pounds of annual palatable forage per acre.
4. South Slope/fair condition: 165 pounds of perennial and 28 pounds of annual palatable forage per acre.

Pasture Forage Production

Pasture 1

This pasture contains a total of 9,015 acres, of which 6,636 acres is suitable and 2,379 acres is unsuitable. It includes 7,212 acres of the South Slope Ecological Site in fair condition (5,886 acres suitable and 1,326 acres unsuitable) and 1,803 acres of the North Slope Ecological Site in good condition (750 acres suitable and 1,053 acres unsuitable). Within Pasture 1, the total AUMs produced on each site/condition were calculated, keeping the AUMs on suitable areas separate from the AUMs on unsuitable areas.

South Slope/fair/suitable. The following calculations are typical of those used for each ecological site/condition/suitability class:

165 lbs/ac perennial forage
x.60 allowable utilization
99 lbs/ac usable perennial forage
x 5,886 acres (portion of Pasture 1)
582,714 lbs of usable perennial forage
÷ 800 lbs/AUM
728 AUMs usable perennial forage

28 lbs/ac annual forage
x.20 allowable utilization
5.5 lbs/acre usable annual forage
x 5,886 acres (portion of Pasture 1)
32,962 lbs of usable annual forage
÷ 800 lbs/AUM
41 AUMs usable annual forage

728 AUMs usable perennial forage
+ 41 AUMs usable annual forage
769 AUMs usable forage in South Slope, fair condition, on suitable areas, in Pasture 1.

Other areas in Pasture 1. The same type of calculations as shown above were utilized to determine forage production on the remainder of Pasture 1. The results are given below:

1. South Slope/fair/unsuitable: 173 AUMs
2. North Slope/good/suitable: 572 AUMs
3. North Slope/good/unsuitable: 802 AUMs

Total forage in Pasture 1. The total forage produced was tabulated separately for suitable and unsuitable areas:

769 AUMs on South Slope/fair/suitable
+ 572 AUMs in North Slope/good/suitable
1,341 AUMs on suitable areas in Pasture 1

173 AUMs on South Slope/fair/unsuitable
+ 802 AUMs on North Slope/good/unsuitable
975 AUMs on unsuitable areas in Pasture 1

Pasture 2

This pasture includes 7,335 acres (4,401 South Slope/fair and 2,934 Loamy/fair) that is entirely suitable and produces the following amounts of forage:

576 AUMs on South Slope/fair
+ 763 AUMs on Loamy/fair
1,339 AUMs total forage

Pasture 3

This pasture includes 6,540 acres (3,270 Loamy/fair and 3,270 Loamy/poor) that is entirely suitable and produces the following amounts of forage:

850 AUMs on Loamy/fair
+ 510 AUMs on Loamy/poor
1,360 AUMs total forage

Allotment Forage Production

Suitable Areas (Inventoried Grazing Capacity)

1,341 AUMs in Pasture 1
+ 1,339 AUMs in Pasture 2
+ 1,360 AUMs in Pasture 3
4,040 AUMs total forage = Inventoried Grazing Capacity of Green Springs Allotment

Unsuitable Areas

975 AUMs in Pasture 1
+ 0 AUMs in Pastures 2 and 3
975 AUMs total forage

Big Game Forage Demand

Deer

One hundred wintering deer spend approximately five months in the allotment; 25 percent of the use is in Pasture 1, 37 percent is in Pasture 2 and 38 percent is in Pasture 3. All deer use occurs on suitable areas. Each deer consumes 200 pounds of forage per month, 80 percent of which is competitive and 20 percent is noncompetitive with livestock grazing.

100 deer
x 5 months
500 deer months
x 200 lb forage/deer month
100,000 lb forage
÷ 800 lb/AUM
125 AUMs total required for deer
x .80 competitive
100 AUMs competitive forage required for deer

100 total competitive deer AUMs
x .25 in Pasture 1
25 competitive deer AUMs in Pasture 1

100 total competitive deer AUMs
x .37 in Pasture 2
37 competitive deer AUMs in Pasture 2

100 total competitive deer AUMs
x .38 in Pasture 3
38 competitive deer AUMs in Pasture 3

Elk

Fifteen resident elk inhabit the allotment year-round. Approximately 75 percent of their use occurs in Pasture 1 (25 percent on suitable areas and 50 percent on unsuitable areas), 10 percent in Pasture 2, and 15 percent in Pasture 3. Each elk consumes 500 pounds of forage per month. Although the elk's diet is considered to be entirely competitive with livestock, 50 percent of their forage in this allotment is allocated from the unsuitable area.

15 elk
x 12 months
180 elk months
x 500 lb forage/elk month
90,000 lb forage
÷ 800 lb/AUM
113 AUMs
x 100 percent competitive
113 AUMs competitive forage required for elk

113 total elk AUMs
x .75 in Pasture 1
85 elk AUMs in Pasture 1
- 57 elk AUMs assigned to unsuitable areas
28 competitive elk AUMs in Pasture 1

113 total elk AUMs
x .10 in Pasture 2
11 competitive elk AUMs in Pasture 2

113 total elk AUMs
x .15 in Pasture 3
17 competitive elk AUMs in Pasture 3

Livestock Grazing Capacity

The competitive big game forage demand in each pasture was subtracted from the Inventoried Grazing Capacity to determine the Livestock Grazing Capacity

1,341 AUMs Inventoried Grazing Capacity of Pasture 1
- 21 AUMs competitive deer forage
- 28 AUMs competitive elk forage
1,288 AUMs Livestock Grazing Capacity of Pasture 1

1,339 AUMs Inventoried Grazing Capacity of Pasture 2
- 37 AUMs competitive deer forage
- 11 AUMs competitive elk forage
1,291 AUMs Livestock Grazing Capacity of Pasture 2

1,360 AUMs Inventoried Grazing Capacity of Pasture 3
- 38 AUMs competitive deer forage
- 17 AUMs competitive elk forage
1,305 AUMs Livestock Grazing Capacity of Pasture 3

1,288 AUMs Pasture 1
1,291 AUMs Pasture 2
1,305 AUMs Pasture 3
3,884 AUMs Livestock Grazing Capacity of Green Springs Allotment

Livestock Initial Stocking Rate

Because a three-treatment rest-rotation grazing system was selected for the Green Springs Allotment, one pasture would be completely rested from livestock grazing each year, leaving two pastures to provide all the livestock forage. Therefore, the Livestock Grazing Capacity of the pasture with the largest number of AUMs to be rested was subtracted from the Livestock Grazing Capacity of the entire allotment. The end result was the Initial Stocking Rate, which determined the number of AUMs to be annually licensed for livestock grazing.

3,884 AUMs Livestock Grazing Capacity of Green Springs Allotment
- 1,305 AUMs Livestock Grazing Capacity of Pasture 3
2,589 AUMs Livestock Initial Stocking Rate for the Green Springs Allotment

APPENDIX 2

SOILS

SOIL EROSION METHODOLOGY

Musgrave Equation

Erosion rates were calculated using the Musgrave Equation as outlined in the BLM Manual Section 7317.22. This equation, developed by G.W. Musgrave, gives an estimation of sheet erosion by water. The equation was developed from measured erosion rates on plots with 10 percent slope, 72.6 feet slope length, and a 30-minute rainfall of 1.375 inches. The equation is as follows:

$$E = FR\,(S/10)^{1.35}\,(L/72.6)^{0.35}\,(P/1.375)^{1.75}$$

E = sheet erosion in tons/acre/year
F = basic erosion rate of bare soil in tons/acre/year
R = cover factor
S = average slope of contributing area in percent
L = length of longest contributing meander waterway in feet
P = maximum 2-year frequency, 30-minute rainfall in inches

Existing Erosion Rates

The data gathered during the soil and vegetation inventories were used in conjunction with the nomographs and illustrations in BLM Manual 7317.22 to solve the equation. Erosion rates were calculated for each detailed soil mapping unit and a weighted average of soil erosion rates by mapping unit for each allotment was computed. The erosion rates were then converted to ac ft/sq mi/yr. These erosion rates are displayed in Table 2-4.

Changes in Erosion Rates

The main variable in the Musgrave Equation that would be affected by the Proposed Action and the five alternatives is the Cover Factor (R), which is inversely related to the percent of ground cover. The other variables would be essentially independent of grazing management and were considered constant for purposes of analysis. Estimated changes in cover resulting from forage allocation were based on proposed adjustments in stocking rates. A reduction in livestock numbers would increase the amount of vegetation and litter remaining on the ground. This would result in an increase in cover and a decrease in the Cover Factor. An increase in livestock numbers would have the opposite effect.

The impacts on soil erosion due to grazing management, which includes grazing systems, range improvements, and protection, were based on estimated changes in vegetation production in the long term. An increase in production would increase cover and a decrease in production would decrease cover causing the Cover Factor to vary inversely.

Changes in soil erosion due to range improvements would be dependent on the kind of treatment. For each treatment the degree of disturbance was evaluated to estimate the decrease in ground cover (estimated to be 30-100 percent in the short term). Decreases in ground cover would cause the Cover Factor and erosion rates to increase. The majority of areas were predicted to revegetate within approximately two years, reducing erosion rates accordingly.

TABLE A2-1

SUMMARY OF SOIL EROSION IN THE ES AREA BY ALLOTMENT: EROSION RATES AND CHANGE IN EROSION RATES 1/

ALLOTMENT NAME	PRESENT CONDITION	PROPOSED ACTION		ALTERNATIVE 1 NO ACTION		ALTERNATIVE 2 DISCONT. LVST. GRAZ.		ALTERNATIVE 3 LOWER LEVEL STOCKING		ALTERNATIVE 4 MAXIMUM REHAB.		ALTERNATIVE 5 MODIFIED PROP.	
	EROSION (ac ft/ 2/ sq mi/yr)	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/	EROSION (ac ft/ 2/ sq mi/yr)	CHANGE From Present % 3/
Black Buttes	0.97	0.86	-11	0.99	+2	0.69	-29	0.75	-23	0.75	-23	0.86	-11
Black Canyon	0.95	0.88	-7	0.97	+2	0.84	-12	0.87	-8	0.90	-5	0.88	-7
Canal	1.03	0.88	-15	1.03	0	0.64	-38	0.74	-28	0.80	-22	0.88	-15
Clover Creek	1.12	1.04	-7	1.12	0	0.91	-19	1.00	-11	1.04	-7	1.04	-7
Compound	0.97	0.88	-9	0.99	+2	0.94	-3	0.76	-22	0.90	-7	0.88	-9
Cove Creek	0.94	0.81	-14	0.94	0	0.63	-33	0.71	-24	0.66	-30	0.81	-14
Davis Mountain	1.44	1.47	+2	1.44	0	1.30	-10	1.35	-6	1.44	0	1.44	0
Dempsey	1.13	1.01	-11	1.13	0	0.85	-25	0.92	-19	1.01	-11	1.01	-11
Fricke	0.41	0.37	-9	0.41	0	0.33	-19	0.36	-11	0.35	-14	0.37	-9
Gwin Ranch	1.86	1.99	+7	1.86	0	1.77	-5	1.86	0	1.99	+7	1.99	+7
Hash Spring	0.78	0.76	-3	0.80	+3	0.67	-14	0.74	-5	0.78	0	0.76	-3
Hill City Branch	0.97	0.87	-10	0.99	+2	0.65	-33	0.76	-21	0.85	-12	0.87	-10
Indian	1.05	0.95	-10	1.07	+2	0.85	-19	0.90	-14	0.92	-12	0.95	-10
Kime	0.96	0.78	-19	0.98	+2	0.56	-42	0.68	-29	0.74	-23	0.78	-19
King Hill	1.31	1.15	-12	1.31	0	1.07	-18	1.15	-12	1.15	-12	1.15	-12
Kinzie Butte	2.18	2.01	-8	2.18	0	1.83	-16	1.90	-13	2.05	-6	2.01	-8
Lava	0.32	0.24	-26	0.32	0	0.25	-22	0.25	-22	0.26	-19	0.24	-26
Lower Magic	1.32	1.06	-20	1.49	+13	0.61	-54	0.74	-44	1.15	-13	1.06	-20
Macon Flat	0.44	0.40	-10	0.45	+2	0.31	-30	0.35	-20	0.42	-5	0.35	-20
Magic	1.23	1.11	-10	1.23	0	0.92	-25	0.98	-20	1.11	-10	1.11	-10
North Gooding	0.84	0.91	+8	0.84	0	0.79	-6	0.82	-2	0.81	-4	0.79	-6
North Shoshone	1.08	1.00	-7	1.08	0	0.93	-14	0.96	-11	1.00	-7	1.00	-7
North Slope	1.51	1.43	-5	1.51	0	1.04	-31	1.43	-5	1.43	-5	1.43	-5
Picabo	1.42	1.32	-7	1.45	+2	1.22	-14	1.29	-9	1.20	-16	1.31	-8
Pioneer	0.78	0.37	-52	0.80	+3	0.32	-59	0.34	-57	0.35	-55	0.37	-52
Poison Creek	1.09	0.85	-22	1.07	-2	1.04	-5	1.04	-5	0.85	-22	0.85	-22
Rattlesnake	1.23	1.09	-11	1.25	+2	1.05	-15	1.07	-13	1.07	-13	1.09	-11
Richfield Cattle	0.85	0.85	0	0.82	-3	0.54	-36	0.69	019	0.85	0	0.85	0
Schooler Creek	0.67	0.68	+2	0.65	-3	0.38	-44	0.56	-16	0.66	-2	0.68	+2
Spud Patch	1.97	1,93	-2	1.97	0	1.75	-11	1.85	-6	1.93	-2	1.93	-2
Spring Creek	0.66	0.73	+11	0.65	-2	0.63	-5	0.69	+4	0.73	+11	0.73	+11
Springdale	0.23	0.24	+3	0.23	0	0.21	-10	0.23	-2	0.24	-3	0.24	+3
Struthers	1.14	1.08	-5	1.14	0	0.99	-13	1.05	-8	1.07	-6	1.08	-5
Swinging Bridge	1.13	1.13	0	1.13	0	1.01	-11	1.04	-8	1.08	-4	1.13	0
Tne Pasture	0.38	0.36	-5	0.39	+2	0.29	-23	0.33	-13	0.33	-13	0.36	-5
Ticeska	0.55	0.46	-17	0.55	0	0.37	-32	0.41	-25	0.45	-19	0.46	-17
Tikura	0.59	0.59	0	0.61	+3	0.44	-26	0.52	-12	0.59	0	0.59	0
Timmerman East	0.81	0.85	+5	0.77	-5	0.68	-16	0.77	-5	0.79	-3	0.79	-3
Timmerman West	1.22	1.32	+8	1.18	-3	1.02	-16	1.22	0	1.32	+8	1.32	+8
Track	1.32	1.20	-9	1.32	0	1.03	-22	1.15	-13	1.24	-6	1.20	-9
"46"	0.64	0.56	-13	0.64	0	0.45	-30	0.51	-20	0.49	-23	0.56	-13
"101"	0.31	0.28	-11	0.32	-2	0.23	-25	0.24	-22	0.26	-16	0.28	-11
ES AREA AVERAGE	1.00	0.95	-5	1.00	0	0.84	-16	0.89	-11	0.93	-7	0.93	-7

1/ The erosion rates given for the Prpoosed Action and Alternatives are based on expected conditions fifteen years after completion of this ES and initiation of the selected grazing management.

2/ Erosion rates were calculated by the Musgrave Equation, as explained in Appendix 2. The Sediment Yield Rating System (USDI, BLM 1976) defines erosion classes based on the erosion rate in acre-feet per square mile per year (ac ft/ sq mi/yr) as follows: 0 to.30 is low, .30 to.90 is moderate, and more than .90 is high.

3/ A negative value indicates a decrease in erosion; a positive value indicates an increase in erosion.

APPENDIX 3

VEGETATION

METHODOLOGY FOR DETERMINING POTENTIAL NATURAL VEGETATION PRODUCTIVITY

Potential natural vegetation reflects the characteristics of soil, climatic conditions, plant species adaptability, and long term influences such as naturally occurring wildfire and native grazing animals. Vegetation in the excellent condition category (76-100 percent native vegetation species) represents the vegetation which was typical throughout the ES Area prior to the late 1800's. Since then, sustained livestock grazing pressure and wildfire have caused significant changes in plant community composition with a resultant decrease in forage productivity and availability. In order to determine what the productivity of the original vegetation was, relict areas (undisturbed by grazing) in excellent condition have been studied for several years by agency and university scientists.

Site guides, similar to the three-tip sagebrush/bluebunch wheatgrass site guide included in this appendix, were prepared for each of the fifteen ecological sites found in the Shoshone ES Area. Existing Soil Conservation Service (SCS) information for these sites, gathered over many years, was the primary data source for the site guides; it was supplemented by data gathered within the Shoshone ES Area in 1976. Since no excellent condition samples were taken within the ES Area (Table A3-1), the productivity of sites in the excellent condition category was taken entirely from SCS data.

As shown in Table A3-1, total vegetation (herbage) production figures for each site were prepared to reflect a range in production to account for both optimum and poor growing seasons. Likewise, the palatable vegetation (both perennial and annual) production fluctuates from year to year. In all cases the lowest forage production in excellent condition was used in determining the potential grazing capacity for each ecological site.

When the third order soil survey was conducted, the soil series were grouped into soil associations. These association formed the basis for the soil mapping units. Each soil mapping unit shows the percentage of each soil series, inclusions and rock outcrops (available at the Shoshone District Office). In addition, ecological sites were assigned by percentage to the soil mapping units. For example, soil mapping unit 54E has Uhrig Series (50 percent), Leduck Series (30 percent), inclusions of other soils (15 percent), and rock outcrop (5 percent). Similarly, mapping unit

TABLE A3-1

RANGE OF VARIATION IN PRODUCTION AND AVERAGE SAMPLED PRODUCTION OF ECOLOGICAL SITES FOUND WITHIN THE SHOSHONE ES AREA

MOISTURE ZONE, ECOLOGICAL SITE, AND VEGETATION CONDITION CLASS	RANGE OF VARIATION IN PRODUCTION 1/ OVER THE APPLICABLE GEOGRAPHIC DISTRUBUTION OF THE ECOLOGICAL SITE					MEAN (AVERAGE) PRODUCTION FROM ECOLOGICAL SITE SAMPLES WITHIN THE SHOSHONE ES AREA 2/				
	TOTAL HERBAGE PRODUCTION (lbs/acre)	UNPALATABLE HERBAGE (lbs/acre)	PALATABLE PERENNIAL HERBAGE (lbs/acre)	PALATABLE ANNUAL HERBAGE (lbs/acre)	GRAZING CAPACITY (Acres/AUM)	TOTAL HERBAGE PRODUCTION (lbs/acre)	UNPALATABLE HERBAGE (lbs/acre)	PALATABLE PERENNIAL HERBAGE (lbs/acre)	PALATABLE ANNUAL HERBAGE (lbs/acre)	GRAZING CAPACITY (Acres/AUM)
8"-12" Moisture Zone										
Wyoming big sagebrush-Bluebunch wheatgrass (Churing Clay)										
Excellent	300-600	119-249	178-345	3-6	7.7-3.8		No sample from Shoshone ES Area			
Good	250-500	132-265	115-230	3-5	11.5-5.8		No sample from Shoshone ES Area			
Fair	200-450	129-310	59-117	12-23	24.1-10.7		No sample from Shoshone ES Area			
Poor	150-450	116-349	19-56	15-45	56.1-18.7		No sample from Shoshone ES Area			
Wyoming big sagebrush Bluebunch wheatgrass (Clay Pan)										
Excellent	500-1000	125-250	350-700	25-50	3.6-1.8		No sample from Shoshone ES Area			
Good	500-1000	124-250	288-575	88-175	4.0-2.0	666	153	386	127	3.1
Fair	400-900	172-405	140-315	88-180	7.4-3.3	490	263	224	34	5.7
Poor	300-900	150-450	45-135	105-315	13.3-4.4	552	290	61	201	10.4
Wyoming big sagebrush-Thurber's needlegrass (Loamy)										
Excellent	600-1200	107-214	433-866	60-120	2.8-1.4		No sample from Shoshone ES Area			
Good	500-1100	150-330	300-660	50-110	3.8-1.6	846	475	298	73	4.2
Fair	400-1100	120-330	140-385	140-385	5.8-2.1		No sample from Shoshone ES Area			
Poor	300-1300	165-715	45-195	90-390	15.7-3.6	844	624	68	152	11.2
Seeded						470	132	178	160	5.8
Basin big sagebrush-Indian ricegrass (Sandy)										
Excellent	400-800	110-220	270-540	20-40	4.6-2.3		No sample from Shoshone ES Area			
Good	400-700	130-227	220-385	50-88	5.8-3.0		No sample from Shoshone ES Area			
Fair	350-600	120-204	125-216	105-180	7.2-4.2		No sample from Shoshone ES Area			
Poor	200-600	35-255	85-105	80-240	17.8-5.9	943	603	29	311	10.0
Seeded						145	38	32	75	23.4
8"-16" Moisture Zone										
Shallow Stony 3/										
Excellent	250-500	76-126	162-325	12-49	7.8-3.9		No sample from Shoshone ES Area			
Good	200-450	65-157	118-259	17-34	9.2-4.8		No sample from Shoshone ES Area			
Fair	150-400	56-150	75-200	19-50	15.9-5.9		No sample from Shoshone ES Area			
Poor	100-400	52-206	26-104	22-90	37.9-9.5	300	186	102	12	12.6
12"-16" Moisture Zone										
Alkali sagebrush - Idaho fescue (Stony Clay)										
Excellent	300-700	60-140	225-525	15-35	5.6-2.4		No sample from Shoshone ES Area			
Good	250-700	81-394	150-253	19-53	8.3-3.0	716	227	482	7	2.8
Fair	200-700	58-321	107-257	35-122	10.6-4.2	408	260	143	5	37.4
Poor	150-600	77-309	28-111	45-180	25.3-6.3	521	479	34	8	36.4
Three-tip sagebrush-Bluebunch wheatgrass (Clayey)										
Excellent	700-1400	153-364	498-938	49-98	2.7-1.3		No sample from Shoshone ES Area			
Good	700-1400	259-568	392-741	49-91	3.1-1.6		No sample from Shoshone ES Area			
Fair	600-1300	220-607	260-433	120-260	4.2-2.3	1114	507	598	9	2.1
Poor	500-1400	235-790	140-305	125-305	12.3-5.2	502	420	39	43	25.0
Basin big sagebrush-Bluebunch wheatgrass (Loamy)										
Excellent	700-1600	46-291	630-1260	24-49	2.2-1.1		No sample from Shoshone ES Area			
Good	800-1300	296-481	464-754	40-65	2.7-1.7	806	575	222	9	5.9
Fair	600-1200	339-678	186-372	75-150	5.8-2.9	932	564	355	13	3.7
Poor	500-1400	312-875	75-210	113-315	10.6-4.1	666	524	97	45	11.9
Seeded						579	455	104	20	12.0
Low sagebrush-Bluebunch wheatgrass (Stony Clayey)										
Excellent	300-650	112-243	173-374	15-33	7.3-3.4		No sample from Shoshone ES Area			
Good	300-600	149-300	128-255	23-45	9.5-4.8		No sample from Shoshone ES Area			
Fair	250-500	125-249	81-163	44-88	12.3-6.2	414	330	58	26	20.0
Poor	200-550	120-329	30-83	50-138	22.2-8.1	422	328	81	13	15.6
Basin big sagebrush-Bluebunch wheatgrass (South Slope)										
Excellent	600-1200	90-180	480-960	30-60	2.6-1.3		No sample from Shoshone ES Area			
Good	500-1000	135-270	300-600	65-130	4.0-2.0		No sample from Shoshone ES Area			
Fair	400-1000	108-475	130-325	162-200	7.8-3.1		No sample from Shoshone ES Area			
Poor	300-1100	173-783	52-192	75-125	15.2-7.0		No sample from Shoshone ES Area			
6"-20" Moisture Zone										
Mountain big sagebrush-Idaho fescue (North Slope)										
Excellent	1200-2000	192-320	960-1600	48-80	1.3-0.8		No sample from Shoshone ES Area			
Good	1100-1800	428-666	612-1035	60-99	2.0-1.2		No sample from Shoshone ES Area			
Fair	1000-1600	550-880	960-1600	75-120	3.2-2.0	1374	911	431	32	3.0
Poor	500-1500	344-1036	68-202	88-262	12.7-4.2	585	401	180	4	7.4
Tufted hairgrass-Willow (Wet Meadow)										
Excellent	3000-5000	50-1542	1458-4050	Trace	0.5-0.2		No sample from Shoshone ES Area			
Good	3000-4000	840-1120	2130-2840	30-40	0.6-0.5	4825	638	4187	0	0.3
Fair	2000-3000	1130-1695	820-1230	50-75	1.6-1.1	3860	762	3512	0	0.4
Poor	1000-2000	715-1430	235-470	50-100	5.3-2.6	2509	492	2017	0	0.7
Slender wheatgrass-Sedge (Semi-Wet Meadow)										
Excellent	2000-4000	260-520	1720-3440	20-40	0.8-0.4		No sample from Shoshone ES Area			
Good	2000-3000	560-840	1420-2130	20-30	0.9-0.6	2136	197	1826	113	0.7
Fair	1000-2000	440-880	535-1070	25-50	2.4-1.2	1709	98	1461	150	0.9
Poor	750-1500	487-974	244-488	19-38	5.3-2.7	1358	74	1096	188	1.2

1/ These ranges of production are condensed from the BLM/SCS Ecological Site Guides developed for the 1976 Shoshone ES Area vegetation survey. The data were gathered from widely varying, but still identifiable sites over a broad geographic location including Southern Idaho and adjacent Northern Nevada.

2/ The figures represent the arithmetic average production of the ecological sites by vegetation condition classes field-sampled during the 1976 field inventory of the Shoshone ES Area.

3/ The Shallow Stony site does not support characteristic indicator vegetation. It supports many kinds of vegetation over a broad moisture range.

54E has low sagebrush-bluebunch wheatgrass (65 percent), basin big sagebrush-bluebunch wheatgrass (30 percent), and rock outcrop (5 percent).

The first step in determining potential forage production by allotment was to compute the acreage of each soil mapping unit in each allotment. For example, assume an allotment includes 500 acres of public land; also assume there are two soil mapping units within the allotment. Soil mapping unit 54E covers 320 acres, mapping unit 55E makes up the other 180 acres.

The second step was to apply the previously determined percentages of ecological sites within the soil mapping units to arrive at the acreage of ecological sites within the allotment.

Soil mapping unit 54E was calculated as follows:

Low sagebrush-bluebunch wheatgrass, 65 percent x 320 acres = 208 acres

Basin big sagebrush-bluebunch wheatgrass, 30 percent x 320 acres = 96 acres

Rock outcrop, 5 percent x 320 acres = 16 acres

Similarly, soil mapping unit 55E was calculated:

Basin big sagebrush-bluebunch wheatgrass, 40 percent x 180 acres = 72 acres

Three-tip sagebrush-bluebunch wheatgrass, 20 percent x 180 acres = 36 acres

Rock outcrop, 40 percent x 180 acres = 72 acres

The third step was to add the acreages of ecological sites or rock outcrop:

Low sagebrush-bluebunch wheatgrass	208 acres
Basin big sagebrush-bluebunch wheatgrass	168 acres
Three-tip sagebrush-bluebunch wheatgrass	36 acres
Rock outcrop	88 acres
Total for allotment	500 acres

The fourth step was to determine the amount of vegetation for each ecological site which could be allocated to grazing animals. The low end of the range of production for both palatable perennials and palatable annuals shown in Table A3-1 was used. A factor of 60 percent was applied to perennials, 20 percent to annuals (see Appendix 1):

Low sagebrush-bluebunch wheatgrass	107 lb/acre
Basin big sagebrush-bluebunch wheatgrass	383 lb/acre
Three-tip sagebrush-bluebunch wheatgrass	309 lb/acre
Rock outcrop	0 lb/acre

The fifth step was to multiply the pound/acre allocable forage for each ecological site by the number of acres of that site in the allotment:

Low sagebrush-bluebunch wheatgrass, 107 lb/acre x 208 acres = 22,256 pounds

Basin big sagebrush-bluebunch wheatgrass, 383 lb/acre x 168 acres 64,344 pounds

Three-tip sagebrush-bluebunch wheatgrass, 309 lb/acre x 36 ac= 11,124 pounds

Rock outcrop, no production of allocable forage

Thus, 97,724 or 97,700 pounds of allocable forage would be produced on the allotment.

This converts to AUMs by dividing by 800 pounds/AUM, the monthly forage requirement for one cow or its equivalent. Thus, 97,700 pounds ÷ 800 pounds/AUM = 122 AUMs.

This is converted to acres/AUM by dividing the acres in the allotment by the AUMs in the allotment. Thus, 500 acres ÷ 112 AUMs = 4.1 acres/AUM.

Therefore, if the allotment were in excellent condition (having the potential natural vegetation) it would produce an average of 122 AUMs (97,700 pounds) of palatable herbaceous vegetation. This would be an average of 195 pounds per acre. It could be stocked at 4.1 acres/AUM.

EXAMPLE OF ECOLOGICAL SITE GUIDE:
THREE-TIP SAGEBRUSH/BLUEBUNCH WHEATGRASS
CLAYEY 12 TO 16" MZ

Major Species in the Potential Natural Plant Community in Order of Abundance

Thurber needlegrass (Stipa thurberiana), Threetip sagebrush (Artemisia tripartita), Bluebunch wheatgrass (Agropyron spicatum). Where this site extends into the 14- 16" MZ, Bluebunch wheatgrass and Idaho fescue (Festuca idahoensis) replaces Thurber needlegrass.

A. PHYSIOGRAPHIC CHARACTERISTICS

1. Physiographic Features

The elevation ranges from 4000 feet to 5500 feet on basalt residuum. This site occurs on rolling plains and hills as well as on mounds and intermounds. It occurs on all aspects with the dominant being south or east. This site occurs mostly on flat to gently rolling hilly areas with slopes varying from 1 to 20 percent, commonly from 1 to 5 percent.

2. Soils

The soils occur on rolling plains, hills, and mounds. They are all derived from basalt residuum. They are moderately deep to deep, well developed, well drained soils. The surface colors range from dark gray brown to brown, from about 8 to 18 inches. The surface textures are mostly silt loams, which grade into a silty clay or a clay. The reactions (pH) range from about 6.6 to 6.8 above the calcium layers. Here the reaction increases to about 8.4. The lime layers start around 25 inches. Infiltration is good, however, internal water movement is very slow because of the heavy clay. This is also indicated by the presence of Threetip sagebrush (ARTR4). Root penetration in this soil material is not limited by the soil material, however, the seasonal water table does pose problems to many plants. This is the main reason Big sagebrush does not grow well here but Threetip sagebrush does. These soils have a good water infiltration in the surface 12 inches and this moisture is readily available to plants. Under proper management these soils have little surface runoff and thus only a slight soil erosion hazard. An exception to this occurs when a warm rain falls on frozen ground. This quick thaw, combined with the rain, causes excessive surface runoff and thus a potential for soil loss.

3. Potential Natural Plant Community (Composition and Productivity)

Most of the information concerned with the potential was obtained from the SCS soils and range team. The identification numbers of the site are 9-59 (SCS) and D 28-7 IU (University of Idaho).

This plant community is 45- 65 percent perennial grasses, 10- 25 percent forbs, and 15- 35 percent woody plants, by air dry weight.

The following table represents the potential or native vegetation. This is equivalent to excellent condition.

12 Year Study with 20 Random Sampled Plots Taken Each Year

COMMON NAMES	PLANT SYMBOLS	LBS/ACRE 1/	% COMPOSITION 1/
Grasses and Grasslike Plants Perennial		450 - 650	45 - 65
Thurber needlegrass 2/ 3/	STTH2	200 - 350	25 - 35
Bluebunch wheatgrass 2/ 3/	AGSP	100 - 200	10 - 20
Sandberg bluegrass	POSE	50 - 100	5 - 10
Prairie junegrass 3/	KOCR	50 - 100	5 - 10
Streambank wheatgrass	AGRI	5 - 20	1 - 2
Idaho fescue 2/ 3/	FEID	2 - 10	1 - 2
Bottlebrush squirreltail	SIHY	20 - 50	2 - 5
Other grasses 4/		2 - 10	0 - 3
Forbs Perennial		10 - 25	10 - 25
Stipate milkvetch	ASFI	20 - 80	2 - 5
Tapertip hawksbeard 3/	CRAC2	20 - 80	2 - 5
Longleaf phlox	PHLO2	10 - 50	1 - 3
Velvet lupine	LULE3	5 - 20	1 - 2
Nineleaf biscuitroot	LOTR2	5 - 20	1 - 2
Nodding microseris	MINU	0 - 15	0 - 1
Skeleton poison milkvetch	ASCO12	5 - 10	0 - 1
Other forbs 5/		10 - 50	2 - 6
Annuals		2 - 50	0 - 5
Cheatgrass	BRTE	2 - 25	0 - 3
Other annuals 6/		0 - 10	0 - 2
Woody Plants			15 - 35
Threetip sagebrush	ARTR4	130 - 200	15 - 25
Tall green rabbitbrush	CHUI8	0 - 5	0 - T 7/
Tall gray rabbitbrush	CHNA2	5 - 30	1 - 3
Antelope bitterbrush	PUTR2	0 - 5	0 - T
Basin big sagebrush	ARTR2	0 - 5	0 - T
Other shrubs		0 - 5	0 - 1
Total Annual Yields		700 - 1400	100
Total Estimated Litter		900 - 2000	

1/ These columns represent the median range in production in pounds per acre air dry and percent composition by species. The highs and lows have been dropped.

2/ Where this site extends into the 14- 16" MZ, Bluebunch wheatgrass and Idaho fescue replace Thurber needlegrass.

3/ *Key Species*: Plants which should be considered when making management decisions.

4/ *Other Grasses Include*: Basin wildrye (*Elymus cinereus*), Nevada bluegrass (*Poa nevadensis*), Bottlebrush squirreltail (*Sitanion hystrix*), and Threadleaf sedge (*Carex filifolia*).

5/ *Other Forbs Include*: Mountain agoseris (*Agoseris glauca*), Tapertip onion (*Allium acuminatum*), Sow arnica (*Arnica sororia*), Skeleton poison milkvetch (*Astragalus convallarius*), Arrowleaf balsamroot (*Balsamorhiza sagittata*), Broadfruit mariposalily (*Calochortus nitidus*), Matted eriogonum (*Eriogonum caespitosum*), Cushion eriogonum (*Eriogonum ovalifolium*), Prickly lettuce (*Lactuca serriola*), Oblongleaf bluebell (*Mertensia oblongifolia*), Hoods phlox (*Phlox hoodii*), Lambstongue groundsel (*Senecio integerriumus*), and Yellow salsify (*Tragopogon dubius*).

6/ Other annuals include: Slender cleomella (*Collinsia parviflora*), Sagebrush collomia (*Collomia tenella*), and mustard (*Brassica* spp).

4. There are no tree species growing on this site.

5. Green plant cover by ocular estimate was 30- 40 percent.

6. *Total Expected Annual (Yearly) Production*:

Favorable year	- 1400 lbs/acre/year/air dry
Average year	- 1000 lbs/acre/year/air dry
Unfavorable year	- 700 lbs/acre/year/air dry

The highs and lows range from 1432 to 412 lbs/acre/year/air dry.

B. MAJOR USES AND INTERPRETATIONS

1. Grazing Value for Domestic Livestock

The potential natural plant community is suitable to provide excellent forage for sheep and cattle from about mid-May through mid-July. The site provides some forage from mid-July through September; however, during this period it is dry except for the unpalatable brush species. As the forage dries out, it loses some of its nutritional value. Below is a table showing crude protein value for green and dry forage. The numbers are group averages. Within each group there is some degree of fluctuation, but the trends are all the same.

Percent Crude Protein

	Green	Dry
Perennial Grasses	8%	2%
Forbs 1/	10%	5%
Woody Shrubs	12%	7%

1/ Forbs upon drying out are practically nonexistent. They tend to decompose rapidly.

As the forage dries, the amount of feed, which must be consumed in order to meet the animal's nutritional requirement, goes up. During this dry period, it may be economical to use a protein supplement. This supplementation can be advantageous to both the animal and the range. The climate tends to restrict livestock use during the rest of the year due to cold temperatures and snow covering the shorter more palatable grass.

CONSTRAINT RATINGS

	Topography	Water Devel.	Fire	Brush Mgmt.	Predators	Reseeding
Cattle	Slight	Moderate	Moderate	Moderate	Slight	Moderate
Sheep	Slight	Moderate	Moderate	Moderate	Moderate	Moderate

a. Reseeding

Reseeding is moderate because of the many rock outcrops and the amount of stones in and on the surface.

b. Other Limitations

High shrink swell, slow permeability, low soil strength, frost action, rock in profile. The site is not a preferred site for most wildlife species; however, it is occasionally used by all.

2. Woodland Value

No value exists. Sagebrush and other shrubs are often used for firewood by hunters, fishermen, and other recreationists, as well as livestock herders.

TABLE A3-2

NAMES AND SYMBOLS FOR THE MOST COMMON PLANTS IN THE SHOSHONE ES AREA

COMMON NAME	SCIENTIFIC NAME	SYMBOL
TREES		
Alder	Alnus rubra	ALRU2
Cottonwood	Populus trichocarpa	POTR6
Douglas hawthorn	Crataegus douglasii	CRDO2
Quaking aspen	Populus tremuloides	POTR5
Rocky Mtn. Douglas fir	Pseudotsuga menziesii glauca	PSME
Water birch	Betula occidentalis	BEOC2
Willow	Salix spp.	SALIX
SHRUBS		
Alkali sagebrush	Artemisia longiloba	ARLO
Antelope bitterbrush	Purshia tridentata	PUTR2
Basin big sagebrush	Artemisia tridentata tridentata	ARTR2
Chokecherry	Prunus virginiana	PRVI
Currant	Ribes spp.	RIBES
Fern bush	Chamaebatiaria millefolium	CHMI2
Fourwing saltbrush	Atriplex canescens	ATCA2
Fuzzy sagebrush	Artemisia papposa	ARPA16
Gray horsebrush	Tetradymia canescens	TECA2
Gray rabbitbrush	Chrysothamnus nauseosus	CHNA2
Greasewood	Sarcobatus vermiculatus	SAVE4
Green rabbitbrush	Chrysothamus viscidiflorus	CHVI8
Low sagebrush	Artemisia arbuscula	ARAR8
Mock orange	Philadelphia lewisii	PHLE4
Mountain big sagebrush	Artemisia tridentata vaseyana	ARTRV
Serviceberry	Amelanchier utahensis	AMUT
Silver sagebrush	Artemisia cana	ARCA13
Snowberry	Symphorocarpos oreophilus	SYOR2
Snowbush	Ceonothus velutinus	CEVE
Spiny hopsage	Grayia spinosa	GRSE
Threetip sagebrush	Artemisia tripartita	ARTR4
Wild rose	Rosa spp.	ROSA
Wyoming big sagebrush	Artemisia tridentata wyomingensis	ARTRW
GRASSES		
Basin wildrye	Elymus cinereus	ELCI2
Bluebunch wheatgrass	Agropyron spicatum	AGSP
Bottlebrush squirreltail	Sitanion hystrix	SIHY

TABLE A3-2

NAMES AND SYMBOLS FOR THE MOST COMMON PLANTS IN THE SHOSHONE ES AREA

COMMON NAME	SCIENTIFIC NAME	SYMBOL
GRASSES (Continued)		
Cheatgrass	Bromus tectorum	BRTE
Columbia needlegrass	Stipa occidentalis var. columbiana	STOCC
Crested wheatgrass	Agropyron cristatum	AGCR
Idaho fescue	Festuca idahoensis	FEID
Indian ricegrass	Oryzopsis hymenoides	ORHY
Intermediate wheatgrass	Agropyron intermedium	AGIN2
Kentucky bluegrass	Poa pratensis	POPR
Letterman needlegrass	Stipa lettermanii	STLE4
Meadow foxtail	Alopercurus pratensis	ALPR3
Mountain brome	Bromus carinatus	BRCAC
Medusahead wildrye	Taeniatherum asperum	TAAS
Nevada bluegrass	Poa nevadensis	PONE3
Onespike danthonia	Danthonia unispicata	DAUN
Prairie junegrass	Koeleria cristata	KOCR
Rushes	Juncus spp.	JUNCU
Sand dropseed	Sporobolus criptandrus	SPCR
Sandberg bluegrass	Poa sandbergii	POSA
Sedge	Carex spp.	CAREX
Slender wheatgrass	Agropyron caninum majus latiglume	AGCAM2
Streambank wheatgrass	Agropyron riparium	AGRI
Thickspike wheatgrass	Agropyron dasystachyum	AGDA
Thurber needlegrass	Stipa thurberiana	STTH2
Three awngrass	Aristida longiseta	ARLO3
Trisetum	Trisetum spicatum	TRSP2
Tufted hairgrass	Deschampsia caespitosa	DECA5
Western needlegrass	Stipa occidentalis	STOC2
Western wheatgrass	Agropyron smithii	AGSM
Yellow wildrye	Elymus flavescens	ELFL2
FORBS		
Anderson buttercup	Ranunculus andersonii	RAAN
Arrowleaf balsamroot	Balsamorhiza sagittata	BASA3
Aster	Aster spp.	ASTER
Beckwith violet	Viola beckwithii	VIBE2
Bigleaf lupine	Lupinus polyphyllus	LUPO2
Biscuitroot	Lomatium spp.	LOMAT

TABLE A3-2

NAMES AND SYMBOLS FOR THE MOST COMMON PLANTS IN THE SHOSHONE ES AREA

COMMON NAME	SCIENTIFIC NAME	SYMBOL
FORBS (Continued)		
Blue-eyed Mary	Collinsia parviflora	COPA
Buckwheat	Fagopyron esculentum	FAES
Burr buttercup	Ranunculus testiculatus	RATE
Camas	Camassia quamash	CAQU2
Chinese lettuce	Lactuca serriola	LASE
Clover	Trifolium spp.	TRIFO
Clubmoss	Lycopodium spp.	LYCOP
Cockleburr	Xanthium strumarium	ZAST
Cusick primrose	Primula cusickiana	PRCU
Antleaf balsamroot	Balsamoriza hokeri	BAHO
Dandelion	Taraxacum officinale	TAOF
Death camas	Zygadenus venenosus	XYVE
Desert parsley	Pteryia petraea	PTPE
Diffuse knapweed	Centaurea diffusa	CEDI3
Elmore milkvetch	Astragalus purshii ophiogenes	ASPUO
Erigeron	Erigeron spp.	ERIGE
Eriogonum	Eriogonum spp.	ERIOG
Evening primrose	Oenothera spp.	OENOT
Fairfield milkvetch	Astragalus atratus var. inseptus	ASATI
False Solomon seal	Smilacina racemosa	SMILA
Field horsetail	Equisetum arvense	EQAR
Fleabane	Erigeron spp.	ERIGE
Geranium	Geranium spp.	GERAN
Goatsbeard	Tragopogon dubius	TRDU
Golden pea	Thermopsis montana	THMO3
Goldenrod	Solidago spp.	SOLID
Halogeton	Halogeton glomeratus	HAGL
Hood's phlox	Phlox hoodii	PHHO
Indian paintbrush	Castilleja spp.	CASTI
Lambstongue groundsel	Senecio integerrimus	SEIN2
Larkspur	Delphinium spp.	DELPH
Longleaf phlox	PHlox longifolia	PHLO2
Low larkspur	Delphinium bicolor	DEBI
Low pussytoes	Antennaria dimorpha	ANDI2
Lupine	Lupinus spp.	LUPIN
Matted eriogonum	Eriogonum caespitosum	ERCA8
Meadowrue	Thalictrum spp.	THALI
Milkvetch	Astragalus spp.	ASTRA

TABLE A3-2

NAMES AND SYMBOLS FOR THE MOST COMMON PLANTS IN THE SHOSHONE ES AREA

COMMON NAME	SCIENTIFIC NAME	SYMBOL
FORBS (Continued)		
Mountain agoseris	*Agoseris glauca*	AGGL
Mustard	*Brassica spp.*	BRASS2
Narrowleaf pussytoes	*Antennaria stenophylla*	ANST2
Nineleaf biscuitroot	*Lomatium tritenatun*	LOTR2
Oblongleaf bluebell	*Mertensia oblongfolia*	MEOB
Oneflower helianthella	*Helianthella uniflora*	HEUN
Owlclover	*Orthocarpus spp.*	ORTHO
Penstemon	*Penstemon spp.*	PENST
Peppergrass	*Lepidium perfoliatum*	LEPE
Plantain	*Plantago spp.*	PLANT
Pussytoes	*Antennaria spp.*	ANTEN
Royal penstemon	*Penstemon speciosus*	PESP
Russian thistle	*Salsola kali tenuifolia*	SAKAT
Sand scurf-pea	*Psoralea lanceolata*	PSLA
Shooting star	*Dodecatheon spp.*	DODEC
Shrubby aster	*Aster scopulorum*	ASSC3
Shrubby buckwheat	*Eriogonum heracleoide*	ERHE2
Silky loco milkvetch	*Astragalus purshii*	ASPU
Skeleton poison milkvetch	*Astragalus convallarius*	ASCO12
Stipate milkvetch	*Astragalus filipes*	ASFI
Sunflower	*Helianthus annuus*	HEAN3
Tapertip hawksbeard	*Crepis acuminata*	CRAC2
Tapertip onion	*Allium acuminatum*	ALAC4
Tarweed	*Madia glomerata*	MAGL2
Thyme eriogonum	*Eriogonum thymoides*	ERTH4
Velvet lupine	*Lupinus leucophyllus*	LULE3
Water hemlock	*Cicuta bulbifera*	CIBU
White stoneseed	*Lithospermum ruderale*	LIRU4
Yarrow	*Achillea millefolium*	ACMI2

APPENDIX 4

WILDLIFE

TABLE A4-1

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

	1/	2/	3/	VEGETATION ZONE													
Common Name Scientific Name	RELATIVE ABUNDANCE	SEASON OF OCCURRENCE	CLASSIFICATION	RIPARIAN	(ARTRW) Zone Wyoming Big Sagebrush	(ARAR8) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
MAMMALS																	
Black Bear Ursus americanus	u	yl	G	x 0 4/											x 0	x 0	
Racoon Procyon lotor	u	yl	F	x 0								x 0					0
Weasel Short Tail Mustella erminea	c	yl	PR	x 0										0			
Weasel Long Tail Mustella frenata	c	yl	PR	x 0										0			
Mink Mustella vison	c	yl	F	x 0										0			
Otter Lutra canadensis	u/r	yl	F	x o													0
Spotted Skunk Spilogale putorius	u	yl	PR	x 0								x 0		0			
Striped Skunk Mephitis mephitis	c	yl	PR	x 0								x 0		0		0	
Badger Taxidea Taxus	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	0			0		0	
Red Fox Vulpes vulpes	u	yl	F	x 0								x 0		0		0	
Coyote Canis latrans	a	yl	PR	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	
Mountain Lion Felis concolor	u	yl	G	0	x 0		x 0			0				0			
Canada Lynx Felis lynx canadensis	u/r	yl	F	Associated with rough rock terrain and canyons more than vegetation.													
Bobcat Felis rufus	u	yl	F	0	x 0	0	x 0	0	x 0	x 0				0			
Yellowbellied Marmot Marmota flaviventris	a	yl	UP	0	x 0	0	x 0	0	0	x 0	0	x 0					
Townsend Ground Squirrel Spermophilus townsendi	u	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0	x 0	0		0			
Columbian Ground Squirrel Spermophilus columbianus	c	yl	UP	0								x 0		x 0		x 0	
Least Chipmunk Eutamias minimus	c	yl	P		x 0	x 0	x 0	0	0	x 0	0				x 0	0	
Richardson's Red Squirrel Tamiasciurus hudsonicus	u	yl	P												x 0		
Townsend Pocket Gopher Thomomys townsendi	u	yl	UP	x 0							x 0	x 0		x 0		0	
Northern Pocket Gopher Thomomys talpoides	u	yl	UP	0	x 0		x 0				x 0	x 0		x 0		0	
Great Basin Pocket Mouse Perognathus parvus	c	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Ord Kangaroo Rat Dipodomys ordii	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	0		x 0				
Beaver Castor canadensis	c	yl	F	x 0													x 0
Northern Grasshopper Mouse Onychomys leucogaster	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0		x 0				
Western Harvest Mouse Reithrodontomys megalotis	c	yl	UP		x 0	x 0	x 0	x 0	x 0		x 0	x 0		x 0			
Canyon Mouse Peromyscus crinitus	c	yl	UP	x Associated with rocky canyons 0	0	0	0	0	0	0	0	0	x 0				
Deer Mouse Peromyscus maniculatus	a	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0				
Desert Wood Rat Neotoma lepida	c	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Bushy-Tailed Wood Rat Neotoma cinerea	c	yl	UP	Associated with rim rock and rock slides													
Long-Tailed Vole Microtus longicaudus	c	yl	UP	x o													
Mountain Vole Microtus montanus	u	yl	UP											x 0			
Sagebrush Vole Lagurus curtatus	u	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				

Table A4-1 Continued

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

Common Name Scientific Name	1/ RELATIVE ABUNDANCE	2/ SEASON OF OCCURRENCE	3/ CLASSIFICATION	VEGETATION ZONE RIPARIAN	(ARTRW) Zone Wyoming Big Sagebrush	(ARARB) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
Muskrat Ondatra zibethicus	c	yl	F	x 0													x 0
Norway Rat Rattus norvegicus	u	yl	UP	Closely associated with man made structures													
House Mouse Mus musculus	c	yl	UP	Closely associated with man made structures													
Western Jumping Mouse Zapus princeps	c	yl	UP	x 0													
Porcupine Erithizon dorsatum	u	yl	UP	x 0	x 0		x 0		x 0						x 0		
White-Tailed Jack Rabbit Lepus townsendii	u	yl	PR	x 0	x 0	x 0	x 0	x 0	x 0					x 0			
Snowshoe Rabbit Lepus americanus	c	yl	UP	x 0	x 0		x 0						0				
Black-Tailed Jack Rabbit Lepus californicus	a	yl	PR	0	x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Mountain Cottontail Silvilagus nuttallii	a	yl	G	x 0	x 0	x 0	x 0	x 0	x 0				x 0			x 0	
Pygmy Rabbit Silvilagus idahoensis	u	yl	G	0	x 0				x. 0	x 0			x 0				
Rocky Mountain Elk Cervus elaphus	c	yl	G	0	x 0	x 0	x 0	x 0			0	0		0		x 0	
Mule Deer Odocoileus hemionus	c	yl	G	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0		x 0	
Pronghorned Antelope Antilocapra americana	c	yl	G	0	x 0	0	x 0	0	x 0	x 0	x 0	0		0			
REPTILES																	
Leopard Lizard Gambelia wislizeni	c	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Western Fence Lizard Sceloporus occidentalis	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0							
Sagebrush Lizard Sceloporus graciosus	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Short Horned Lizard Phrynosoma douglassi	c	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Western Skink Eumeces skiltonianus	u	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Western Whiptail Chemidophorus tigris	u	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Rubber Boa Charina bottae	u	yl	UP	x 0													
Racer Coluber constrictor	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0		x 0		x 0			
Striped Whip Snake Masticophis taeniatus	u	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Gopher or Bull Snake Pituophis melanoleucus	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	0			
Long-Nosed Snake Rhinocheilus lecontei	u/r	yl	UP		x 0	x 0	x 0	x 0	x 0	x 0			x 0				
Common Garter Snake Thamnophis sirtalis	c	yl	UP	x 0										x 0			
Western Garter Snake Thamnophis elegans	c	yl	UP	x 0										x 0			
Night Snake Hypsiglena torquata	u	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0							
Western Rattlesnake Crotalus viridis	c	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0			

TABLE A4-1 Continued

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

Common Name Scientific Name	1/	2/	3/	VEGETATION ZONE													
	RELATIVE ABUNDANCE	SEASON OF OCCURRENCE	CLASSIFICATION	RIPARIAN	(ARTRW) Zone Wyoming Big Sagebrush	(ARAR8) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
AMPHIBIANS																	
Long-Toed Salamander Ambystoma macrodactylvin	u	yl	UP	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0	x 0				
Western Spadefoot Toad Scophiopus hanmondi	u	yl	UP	x 0													
Western Toad Bufo boreas	u	yl	UP	x 0													
Woodhouse's Toad Bufo woodhousei	u	yl	UP	x 0													
Pacific Tree Frog Hyla regilla	u	yl	UP	x 0													0
Chorus Frog Pseudacris nigrita	u	yl	UP	x 0													x 0
Leopard Frog Rana pipieus	u	yl	UP	x 0													x 0
Mallard Anas platyrhynchos	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Gadwall Anas strepera	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Pintail Anas acuta	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Green Winged Teal Anas carolinensis	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Blue Winged Teal Anas discors	u	M-S	Gb									0					0
Cinnamon Teal Anas cyanoptera	c	M-S	Gb	x 0	x 0		x 0		x 0			o					0
American Widgeon Mareca americana	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Shoveler Spatula clypeata	u	yl	Gb	x 0	x 0		x 0		x 0			0					0
Red Head Aythya americana	u	M-W	Gb									0					0
Canvas Back Aythya valisineria	u	M-W	Gb									0					0
Lesser Scaup Aythya affinis	c	M-W	Gb									0					0
Common Golden-Eye Bucephala clangula	u	M-W	Gb									0					0
Bufflehead Bucephala albeola	u	M-W	Gb									0					0
Ruddy Duck Oxyura jamaicensis	u	M-S	Gb														0
Hooded Merganser Lophodytes cucullatus	u	M-W	Gb														0
Common Merganser Mergus merganzer	c	M-S	Gb	x													0
Turkey Vulture Cathartes aura	x	yl	P	0	0	0	0	0	0	0	0	0	0	0	0	0	
Goshawk Accipiter gentilis	u	M	P	Migrant Passing Through													
Coopers Hawk Accipiter cooperii	u	yl	P	x 0	0		0								x 0		
Sharpshinned Hawk Accipiter striatus	u	M-S	P	x 0	0		0								x 0		
Red-tailed Hawk Buteo jamaicensis	c	yl	P	0	0	0	0	0	0	0				0	0	x	
Swainsons Hawk Buteo ~~lagopus~~	u	M-W	P									0		0		x	
Rough-Legged Hawk Buteo swainsoni	c	M-W	P		0		0					0		0			
Ferruginous Hawk Buteo regalis	u/r	yl	P		0		0										
Golden Eagle Aquila chrysaetos	c	yl	P	0	0	0	0	0	0	0		0		0		x	
Bald Eagle Haliaeetus leucocephalus	u/r	M-W	P	Migrant Passing Through													
Marsh Hawk Circus cyaneus	a	yl	P	x 0								0		x 0			
Osprey Pandion haliaetus	r	M-S	P	Migrant Passing Through													
Prairie Falcon Falco columbarius	u	yl	P	0	0	0	0	0	0	0		0					

Table A4-1 Continued

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

Common Name Scientific Name	1/ Relative Abundance	2/ Season of Occurrence	3/ Classification	Vegetation Zone Riparian	(ARTRW) Zone Wyoming Big Sagebrush	(ARAR8) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
Peregrine Falcon Falco peregrinus	u	M	P	Migrant Passing Through													
Pigeon Hawk Falco columbarius	u/r	M-W	P	0	0		0					0					
Sparrow Hawk Falco sparverius	c	P	P	x 0	0	0	0	0	0	0		0		0	x 0	x 0	
Blue Grouse Dendragapus obscurus	u	yl	Gb	x 0										0			
Sage Grouse Centrocercus urophasianus	c	yl	Gb	0	x 0	0	x 0	0	0	0		0		0		0	
California Quail Lophortyz californicus	u	yl	Gb	0								0		0		0	
Mountain Quail Oreortyz pictus	u	yl	Gb	0								0		0		0	
Chukar Alectoris graeca	c	yl	Gb	x 0	0		0										
Hungarian Partridge Perdix perdix	c	yl	Gb	0	0		0		0		0	0		0		0	
Ring-Necked Pheasant Phasianus colchicus	c	yl	Gb		0		0		0			x 0					
Common Loon Gavia immer	u	M	P														0
Horned Grebe Podiceps auritus	u	M	P														0
Eared Grebe Podiceps caspicus	u	yl	P														x 0
Western Grebe Aechmophorus occidentalis	c	M-S	P														x 0
Pie-Billed Grebe Podilymbus podiceps	u	yl	P														x 0
White Pelican Pelicanus erythrorhynchos	u	M-S	P														0
Double-crested Cormorant Phalacrocorax auritus	u	S	P														0
Great Blue Heron Ardea herodias	c	M-S	P	x 0												x	0
Snowy Egret Leucophoyx thula	u/r	M-S	P	0													0
Black Crowned Night Heron Nycticorax nycticorax	u	M-S	P	x 0													0
American bittern Botaurus lentiginosus	u	M-S	P	0													0
Whistling Swan Olor columbianus	u	M-W	P	Migrant - Passing through													
Canada Goose Branta canadensis moffitti	c	yl	Gb	x 0	x 0		x 0		x 0			0					0
Snow Goose Chen hyperborea	u	M	Gb									0					0
Sand Hill Crane Grus canadensis	u	M	P	Migrant Passing Through													
Virginia Rail Rallus limicola	u	M-W	P	x 0													0
Sora Rail Porzana carolina	u	M-W	P	x 0													0
American Coot Fulica americana	a	yl	Gb	x 0													0
Semipalmated Plover Charadrius semipalmatus	u	M	P	0								0		0			
Killdeer Charadrius vociferus	c	yl	P	x 0								0		0			
Long-Billed Curlew Numenius americanus	u	M-W	P	x 0								0		0			
Common Snipe Capella gallinago	c	M-W	Gb	x 0										0			0
Spotted Sandpiper Actitis macularia	r	M-S	P	x 0										0			0
Greater Yellowlegs Totanus melanoleucus	u	M	P	0													0
Lesser Yellowlegs Totanus fl vipes	u	M	P	0													0
Willet Catoptrophorus semipalmatus	c	M-S	P	0													0
Least Sandpiper Erolia minutilla	c	M	P	0													0
Long-Billed Dowitcher Limnodromus scolopaceus	u	M	P	0													0
Western Sandpiper Ereunetes mauri	c	M	P	0													0
Wilson's Phalarope Steganopus tricolor	c	M-S	P	x 0													0
California Gull Larus californicus	a	M-W	P	/ 0													0
Ring-Billed Gull Larus delawarensis	a	yl	P	x 0													0
Boneparte's Gull Larus philadelphia	u/r	M	P	0													0

TABLE A4-1 Continued

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

Common Name Scientific Name	1/	2/	3/	VEGETATION ZONE													
	RELATIVE ABUNDANCE	SEASON OF OCCURRENCE	CLASSIFICATION	RIPARIAN	(ARTRW) Zone Wyoming Big Sagebrush	(ARAR8) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
Forester's Tern Sterna forsteri	u	M-S	P	0													0
Caspian Tern Hydroprogne caspia	u	M-S	P	0													0
Black Tern Chlidonias niger	u	W	P	0													0
Rock Dove Columba livia	a	yl	UP	x 0								0					
Mourning Dove Zenaidura macroura	c	yl	Gb	x 0	x 0		x 0		x 0	x 0		0		0		x 0	
Barn Owl Tyto alba	u	M-S	P	x 0								0					
Screech Owl Otus asio	u	yl	P	0												0	
Great Horned Owl Bubo virginanus	u	yl	P	x 0	0		0		0	0		0		0		x 0	
Western Burrowing Owl Speotyto canicularia	c	yl	p								x 0	x 0		x 0			
Great Grey Owl Strix nebulosa	u/r	yl	P											0			
Long-Eared Owl Asio otus	u/r	yl	P	x 0												x 0	
Short-Eared Owl Asio flammeus	c	yl	P	0								x 0		x 0			
Poor Will Phalaenoptilus nuttallii	u	M-S	P	0	0		0		0	0		0		0			
Common Night Hawk Cordeiles minor	c	M-S	P	0								0		0			
Broad-Tailed Hummingbird Selasphorus platycercus	u	M-S	P	x 0										0			
Rufous Hummingbird Salasphorus rufus	u	M	P	0										0			
Calliope Hummingbird Stellula calliope	u	M-S	P	0										0			
Belted Kingfisher Megaceryle alcyon	u	M-S	P	x 0													0
Bohemian Waxwing Bombycilla garrulus	u	W	P	0								0				0	
Cedar Waxwing Bombycilla cedrorum	u	W	P	0								0				0	
Red-Shafted Flicker Colaptes cafer	c	yl	P	x 0								0		0		x 0	
Lewis Woodpecker Asyndesmus lewis	u	M-S	P	x 0											x 0	x 0	
Yellow-bellied Sapsucker Sphyrapicus varius	u	M-S	P	0												0	
Hairy Woodpecker Dendrocopos villosus	u	yl	P	x 0												0	
Downy Woodpecker Dendrocopos pubescens	u	yl	P	0												0	
Western Kingbird Tyrannus verticalis	c	M-S	P	0								0		0			
Eastern Kingbird Tryannus tyrannus	c	M=S	P	0								0		0			
Horned Lark Eremophila alpestris	a	yl	P	x 0	x 0	0	x 0	0	0	0	0	0				0	
Violet-Green Swallow Tachycineta thalassina	u	M-S	P	x 0								0					
Barn Swallow Hirundo rustica	c	M-S	P	x 0								0					
Cliff Swallow Petrochelidon pyrrhonota	c	M-S	P	x 0						x		0					
Steller's Jay Cyanocitta stelleri	u	yl	P												0		
Black-Billed Magpie Pica pica	a	yl	P	x 0	0	0	0	0	0	0	0	0	0	0	0	x 0	
Common Raven Corvus corax	a	yl	P	x 0	0		0		0	0		0		0		0	
Common Crow Corvus brachyrhynchos	c	yl		x 0	0		0		0	0		0		0		0	
Black-capped Chickadee Parus atricapillus	c	yl	P	x 0												0	
Plain Titmouse Parus inornatus	u	yl	P	x 0												0	
Dipper Cinclus mexicanus	u	yl	P	x 0													0
House Wren Troglodytes aedon	c	M-S	P	0								x 0				0	
Canyon Wren Catherpes mexicanus	c	yl	P	x 0													
Sage Thrasher Oreoscoptes montanus	u	M-S	P	0	x 0		x 0		x 0								
Robin Turdus migratorius	c	yl	P	x 0								0				x 0	
Mountain Bluebird Sialia currucoides	u	M-S	P	x 0										0		x 0	
Townsend's Solitaire Myadestes townsendi	u	yl	P	x 0												x 0	

TABLE A4-1 Continued

WILDLIFE OCCURRING IN THE SHOSHONE ES AREA

	RELATIVE ABUNDANCE	SEASON OF OCCURRENCE	CLASSIFICATION	VEGETATION ZONE													
				RIPARIAN	(ARTRW) Zone Wyoming Big Sagebrush	(ARAR8) Zone Low Sagebrush	(ARTRV) Zone Mountain Big Sagebrush	(ARLO) Zone Alkali Sagebrush	(ARTR4) Zone Three Tip Sagebrush	Lava Flow Complex	Productive Seedings	Crop Lands	Barren Recent Lava Flow	Meadows	Fir Grove	Deciduous Zone	Aquatic
American Avocet Recurvirostra americana	c	M-W	P	x 0													0
Barred Owl Strix varia	u/r	yl	P	0												0	
Bullock's Oriole Icterus bullockii	u	M-S	P	x 0													
Loggerhead Shrike Lanius ludovicianus	c	M-S	P	x 0	0		0		0			0		0			
Starling Sturnus vulgaris	c	yl	PR									x 0		0		x	
Warbling Vireo Vireo gilvus	u	M-S	P	0												0	
Yellow Warbler Dendroica petechia	u	M-S	P	0												0	
Yellow Breasted Chat Icteria virens	u	M-S	P	0													
American Readstart Setophaga ruticilla	u	M-S	P	0												0	
House Sparrow Passer domesticus	c	yl	UP								0	0		0			
Western Meadowlark Sturnella neglecta	a	M-S	P	x 0	0		0		0		0	0		x 0			
Yellow-headed Blackbird Xanthocephalus Xanthoce.	u	M-S	P	x 0								0		0			
Red-Winged Blackbird Agelaius phoeniceus	c	M-S	P	x 0								0		0			
Brewers Blackbird Euphagus cyanocephalus	c	M-S	P	x 0								0		0			
Brown-headed Cowbird Molothrus ater	u	S	P	0								0		0			
Western Tanager Piranga ludoviciana	u	S	P	x 0													
Black-Headed Grosbeak Pheucticus melanocephalus	u	S	P	0												0	
Evening Grosbeak Hesperiphona vespertina	u	M-S	P	0												0	
Lazuli Bunting Passerina amoena	u	M-S	P	0	0		0		0								
House Finch Carpodacus mexicanus	c	yl	P	0								0					
American Golden Finch Spinus tristis	u	yl	P	x 0												0	
Rufous-sided Towhee Pipilo erythrophtalmus	u	M	P	0													
Oregon Junco Junco oreganus	c	yl	P	0	x 0		x 0		x 0	0		0		0		0	
Savannah Sparrow Passerculus sandwichensis	c	S	P	x 0								0		x 0			
Vesper Sparrow Pooecetes gramineus	u	M-S	P		0		0		0								
Lark Sparrow Chondestes grammacus	c	M-S	P	0	0		0		0			0		0			
Brewers Sparrow Spizella breweri	c	M-S	P		0		0		0								
Sage Sparrow Amphispiza belli	c	M-S	P		0		0		0								
Tree Sparrow Spizella arborea	u	W	P	0								0				0	
Lark Bunting Calamospiza melanocorys	u	M	P		0		0		0		0	0					
Snow Bunting Plectrophenax nivalis	u	W	P								0	0					
Ring-Necked Duck Aythya collaris	u	M-W	Gb									0					0

1/ a = Abundant - Observed every time a person visits its habitat at the proper season
c = Common - Observed most of the time when a person visits habitat at the appropriate season
u = Uncommon - Not observed regularly in its habitat. Habitat may be limited.
r = Rare - Rarely observed. Species occupies a small percentage of its preferred habitat or habitat is extremely limited.

2/ Season of Occurrence: yl = Year Long; M = Migrant; S = Summer; W = Winter

3/ Classification as defined by the Idaho Department of Fish & Game
G = Game Animal; F = Fur Bearer; PR = Predatory Animal; Gb = Game Bird; P = Protected Nongame; UP = Unprotected Nongame

4/ X = Reproduction; 0 = Feeding

TABLE A4-2

CRITERIA FOR RATING BIG GAME HABITAT CONDITION[1]

Species Range Habitat Rating	Description of Criteria
Deer	
Winter Range	
Poor	Browse species generally in decadent condition; few or no young plants; high percentage of plants moderately to severely hedged; plant vigor low; key plant species declining; poor plant species diversity.
Fair	Less than 50 percent of browse plants in decadent condition; moderate number of young browse plants present; key plant species being maintained in composition; plant vigor adequate to maintain good vegetative growth. Fair plant species diversity.
Good	Most browse plants only slightly to moderately hedged; good plant vigor evident; many age classes of browse species present in composition; key plant species being maintained in composition; good plant species diversity.
Spring Range	Sufficient green growth of grasses and forbs are present and available (unused by livestock).
Elk	
Winter Range	
Poor	Browse species (primarily sagebrush, bitterbrush, and chokecherry) in decadent condition or severely hedged; grasses and forbs heavily used by livestock prior to arrival of elk on range; grasses, sedges, and forbs declining in composition; few young browse plants evident; poor plant vigor evident.
Fair	Less than 50 percent of browse plants in decadent condition; fair reproduction of browse plants; plant vigor adequate to provide moderate amounts of forage;

TABLE A4-2 (Continued)

Species Range Habitat Rating	Description of Criteria
	grasses and forbs not heavily utilized by livestock prior to arrival of elk on range; good stand of grasses and forbs in composition.
Good	Browse plants vigorous with several age classes present; good supply of grasses and forbs available for elk; key grasses increasing in composition; range areas relatively free of human disturbance.
Spring Range	Relative condition based on extent of ample new green growth of grasses, sedges, and forbs present and available (unused by livestock).
Summer Range	
Poor	Quality and quantity of grasses and forbs lacking. Key perennial grasses declining; annual grasses increasing. Water poorly distributed and lacking.
Fair	Quality and quantity of grasses and forbs adequate to maintain herd population at present levels; key grasses and forbs being maintained in composition. Water supply adequate but not distributed well or available.
Good	Key grasses and forbs increasing in composition. Adequate quality and quantity of forage to sustain increased populations throughout summer months. Water abundant and readily accessable.
Antelope	
Yearlong Range	
Poor	Inadequate supply of grasses and forbs during spring, summer, and fall to maintain good body nutrition and poor supply of forbs available at fawn weaning time; sagebrush in decadent condition with little reproduction.
Fair	Grasses and forbs being maintained in composition (key species); sagebrush having good vigor and largely available during winter; less than 50 percent of sagebrush in moderate to severe hedging class.

TABLE A4-2 (Continued)

Species Range Habitat Rating	Description of Criteria
Good	Adequate supply of grasses and forbs during spring, summer, and fall to maintain good body nutrition and adequate supply of grasses and forbs available to fawns at weaning time; adequate grasses and forbs available to does at fawning time; sagebrush having good vigor and several age classes present in composition.

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[1] All habitat condition ratings are somewhat subjective. Estimates of habitat condition for the various wildlife species shown in this document were derived by Shoshone District Biologists who reviewed each area and, based on the above-listed criteria, estimated the current condition.

APPENDIX 5

WATERSHED

DIRECT RUNOFF CALCULATION

Direct runoff is defined as that portion of water entering a stream channel during a storm or soon thereafter. Except for water quality, direct runoff was the principal area of concern in water resources for this ES. It was assumed that direct runoff volume was a reasonable indicator of overall effects of livestock disturbance on watersheds. In assessing the grazing impacts, changes in vegetation composition and cover were assumed to be the most important change factors. It was further assumed that soil conditions, types, and slope would remain constant when comparing existing conditions to the Proposed Action and alternatives. The Soil Conservation Service (1964) curve number method was used as the basic method for estimating direct runoff volume. Descriptions of this method can be found in numerous publications including BLM Manual 7315, Chow (1964) Soil Conservation Service (1964) and Dunne and Leopole (1978). This method relies on hydrologic soil groups, precipitation frequency, vegetation type, vegetation condition and cover, and watershed control practices.

Rainfall frequency was chosen as a comparison factor since it is relative to time and better understood by the layman than water yield values. It was hypothesized that a base condition event (runoff produced by a 10-year 24-hour storm) could be related to future watershed conditions and expressed in terms of the size of a precipitation event necessary to produce the base volume of runoff. Positive changes in watershed conditions would decrease the frequency of the base condition volume occurrence, while negative changes would increase the frequency. For example, on poor watersheds, a 10-year storm could produce 50 acre-feet of direct runoff. The same watershed under good watershed conditions might require a 20-year storm to produce the same amount of direct runoff. Base condition events were used to compare hydrologic response to the proposed grazing management on each allotment in the ES Area.

Soils information was drawn from the soil survey of the Shoshone ES Area, on file in the Shoshone District Office. The description of each soil was used to classify the soils into hydrologic classes.

Rainfall frequency information was obtained from isopluvial maps for Idaho (U.S. Department of Commerce 1970). Field inventories provided information on present cover types and values. Cover values for the alternatives were extrapolated through use of vegetation production estimates enumerated in Chapter 8 of this ES. It was realized that the cover value is most important in evaluating change but that no known cover prediction method exists. It was concluded that for the level of impacts encountered, the above-described method would give reasonable estimates of watershed response(s) to the Proposed Action and alternatives.

GLOSSARY

active grazing qualifications: The number of animal unit months (AUMs) of grazing that eligible livestock operators may annually license on public lands. Sometimes referred to as "grazing preference".

active use: Grazing privileges which have been paid for and are presently being used. Active use combined with non-use equals total active grazing qualifications.

aeolian: Arranged by the transporting action of wind. It describes certain soil deposits.

allotment: An area of primarily public land designated and managed for livestock grazing. It consists of one or more pastures and may include private or State land.

allotment managment plan (AMP): A documented program of grazing management for an allotment, developed in consultation with the livestock operators involved, and consistent with the applicable resource management plan. It prescribes the manner and extent of livestock operations to be authorized, describes the proposed range improvements, and contains other provisions deemed appropriate by the BLM District Manager.

alluvium: A general category of deposits resulting from the operation of water, including the sediments laid down in river beds, flood plains, lakes, and fans at the foot of mountain slopes.

animal unit month (AUM): The amount of forage considered necessary to feed one cow or its equivalent for one month. For this ES an AUM represents 800 pounds (air dried) of palatable forage.

annual plant: A plant that completes its life cycle and dies in one year or less.

aquifer: A water-bearing stratum of permeable rock, sand, or gravel.

average licensed use: The arithmetic mean, for a particular period, of livestock grazing (in AUMs) that was authorized. If no trespass occurs, it is equivalent to average "actual use" as applied to livestock grazing.

climatic climax: The natural biotic community, particularly vegetation, that would develop in the long term under undisturbed conditions with a given climate and soils. It would tend to perpetuate itself until disturbed by an outside force.

colluvium: A general category of loose soil or rock deposits, usually at the foot of a slope or cliff and brought there chiefly by gravity.

Compliance Statement 106/2(b): Under the Historic Preservation Act of 1966, the Advisory Council on Historic Preservation must be given an opportunity to comment with regard to any action which may affect any site on or eligible for inclusion on the National Register. If the undertaking would cause a change in the quality of the character of the site, the Advisory Council and State Liaison Officer would consult with the agency to remove or mitigate the effect. Also referred to as 106 Statement.

consumptive use: The removal of water from an area by transpiration of plants and evaporation from soil, snow, water surfaces, and biological organisms.

critical wildlife habitat: A portion of the living area of a wild animal species that is essential to the survival and perpetuation of either the individuals or the entire population.

cultural resources: Objects or places of historical, archaeological, or architectural significance, which are fragile, limited, and nonrenewable portions of the human environment.

deferred use: Annual delay of livestock grazing until a specified occurrence or date in the growing season to promote plant reproduction, establish new plants, and restore vigor in established plants.

drawdown: The distance that the water level of a well or aquifer decreases immediately after water removal.

environment: The surrounding conditions, influences, and forces that effect or modify an organism and ultimately determine its form and survival.

environmental statement (ES): A written document required by the National Environmental Policy Act (P.L. 91-190) for all major Federal actions that significantly affect the quality of the human environment. It systematically assesses the potential impacts of a proposed action and feasible alternatives on the existing environment.

ephemeral stream: A water channel that carries runoff only during precipitation events or snowmelt, and is otherwise dry (also called intermittent stream).

erosion: A process of weathering, dissolution, abrasion, corrosion, and/or transportation by which soil or rocky material is removed from its established location on the earth's surface.

escarpment: The steep face often presented by the abrupt ending of stratified rocks.

ethnographic: Relating to the primarily descriptive and noninterpretive study of individual cultures.

exchange-of-use: An agreement between the Bureau of Land Management and an applicant having ownership or control of non-Federal land which is interspersed and normally grazed in conjunction with the surrounding Federal range. The applicant would be allowed to graze the non-Federal land without payment, provided that during the length of the agreement, the Bureau has control and management of the non-Federal land for grazing purposes. An exchange-of-use agreement is valid only when the non-Federal land offered for exchange-of-use is located within the Federal grazing allotment for which the exchange is sought.

Federal grazing privileges; Permissive use of Federal lands (public lands) for grazing by livestock.

forage: All browse and herbaceous foods that are available to grazing animals.

forb: A broadleafed plant or herb, often referred to as a "weed".

grazing cycle: The time required to complete a sequence of grazing in specified pastures in a certain order. Length of the cycle varies with different grazing systems.

grazing system: A systematic sequence of grazing use and nonuse of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation.

ground cover: The percentage of surface area occupied by vegetation, litter, and rock.

habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

herbivorous animals: Animals that feed on plants.

infiltration: Water penetration into the soil through pores of the soil. Rate and amount of infiltration are limited by size and abundance of pores and water absorption capability of the soil.

inventoried grazing capacity: The calculated animal unit months of forage available for grazing, based on a vegetation survey or study. For this ES, it includes 60 percent of palatable perennial production plus 20 percent of palatable annual production.

key plant species: (1) forage species whose use serves as an indicator to the degree of use of associated species; (2) those species which must, because of their importance, be considered in the management program.

lacustrine: Pertaining to, produced by, or formed in a lake or lakes, e.g., remnants of Pleistocene lakes that are now dry.

license: An authorization that permits the grazing of a specified number and kind of livestock on a designated area of grazing district lands for a period of time.

litter: The uppermost layer of organic debris. It is composed of freshly fallen or slightly decomposed organic materials.

livestock grazing capacity: The number of animal unit months of forage available for livestock grazing on a sustained yield basis on the public lands as determined through land use planning. It does not include competitive forage for big game.

macroinvertebrates: Insects, annelids, mollusks, flatworms, roundworms, and crustaceans inhabiting the bottoms of lakes and streams.

management framework plan (MFP): A document that provides a set of goals, objectives, and constraints for an area of public lands. It guides the development plans for the management of each resource.

National Cooperative Soil Survey: A cooperative effort among various Federal, State, local and private agencies and organizations to survey the soils of the United States. The lead agency in this effort is the Soil Conservation Service of the Department of Agriculture.

National Register: The National Register of Historic Places. It is a register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior.

off-road vehicle (ORV): Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

overgrazing: Consumption of vegetation by herbivores beyond the endurance of plants to survive.

palatability: Quality of being agreeable to taste; savory; desirable to eat.

paleoecology: The study of the past plant and animal life of an area utilizing ecological principles and concepts.

parent material: A mineral or organic material relatively unaffected by soil forming processes that resembles the material from which the soil is presumed to have formed.

pasture: A subdivision of a grazing allotment.

perennial plant: A plant that has a life cycle of three or more years.

perennial stream: Streams flowing throughout the year from source to mouth.

pH: An expression of acidity (hydrogen ion concentration), represented by log (1/(H+)).

phenology: The study of natural phenomenon that recur periodically, such as blossoming, and their relation to climate and changes in season.

physiological: Relating to the organic processes characteristic of a living organism.

planning unit: A geographic unit within a Bureau of Land Management District that includes related lands, resources, and use problems that are considered together for resource inventory, analysis, and planning.

plant canopy cover: The vertical projection downward of the aerial portion of shrubs and trees; usually expressed as a percent of the ground so occupied.

plant density: The number of individual plants per unit of area; the relative closeness of individual plants to one another.

plant succession: The process of vegetational development whereby an area becomes successively occupied by different plant communities of higher ecological order.

plant vigor: The relative well-being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Pleistocene: Period of geologic time, approximately 11,000 to 3 million years ago.

public land: For this ES, Federal land administered by the Bureau of Land Management.

range: An open area where livestock graze.

range condition: A description of the current status and estimated future improvement or deterioration of the vegetation and soil.

range improvement: A structure, action, or practice to increase forage production, improve watershed and range condition, or facilitate management of the range or the livestock grazing on it.

range trend: The direction of change in range condition, usually measured in terms of upward, downward, and static.

Recent: Period of geologic time extending from approximately 11,000 years ago to the present; also known as Holocene.

residuum: Material resulting from the disintegration and decomposition of rocks in place.

resource management plan: A BLM planning document prepared for a resource area. It establishes goals for resource conditions, defines strategies for management actions, outlines methodology for allocation of resources, and formalizes coordination between various resource uses. It has been previously called a management framework plan.

rest: For this ES, temporary removal of grazing on a range area to allow plants to replenish their food reserves.

rest rotation: A grazing system of sequential grazing and resting of the range to provide for the production of livestock while maintaining or improving the vegetation and soil fertility. It includes at least one full growing season of continuous rest from grazing for each pasture in the system.

rhyolite monoliths: A geologic feature consisting of large individual blocks of rhyolite resulting from erosive forces.

riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally used to refer to the plants of all types that grow along streams, around springs, or near other wet areas.

rotation: Sequential movement of livestock from one pasture to another to allow for regrowth of vegetation and maintenance of vegetative vigor.

runoff: That part of precipitation that does not immediately enter the soil or evaporate, ultimately reaching a stream channel. It occurs when the rate of snowmelt or rainfall exceeds the rate of infiltration into the soil.

scenic quality: The aesthetic quality of a visual resource that is rated on the basis of landform, color, water, vegetation, uniqueness, and intrusions by humans.

season of use: The time of livestock grazing on a range area based on type or stage of vegetative growth.

sedimentation: The action of depositing mineral or organic matter in a watercourse.

seed trampling: The planting of seed in a pasture that occurs while livestock graze during the growing period following plant maturity.

siltation: The deposition of fine soil particles that tend to fill in between gravels and rocks on a stream bottom.

soil: The unconsolidated mineral material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

soil association: A group of defined and named soil units occurring together in characteristic patterns over a geographic region.

soil depth classes: Categories of soil thickness. "Shallow" is 0-20 inches, "moderately deep" is 20-40 inches, "deep" is 40-60 inches, and "very deep" is 60+ inches.

soil texture: The relative proportions of sand, silt, and clay particles in a mass of soil.

soil texture groups: Coarse textured (sands, loamy sands), moderately coarse textured (sandy loam, fine sandy loam), medium textured (very fine sandy loam, loam, silt loam, silt), and fine textured (sandy clay, silty clay, clay).

solar incidence: The length of time sunlight is in contact with a surface.

species composition: Proportion of plant species within a vegetative community.

stocking level: The degree to which a grazing unit is stocked with livestock, usually expressed in AUMs. Also referred to as "stocking rate".

suitable areas: Range accessible to livestock that can be grazed on a sustained yield basis under proper management without damage to the resources. For this ES, it includes areas that produce more than 25 pounds of palatable forage per acre, are within four miles of water, and do not exceed 50 percent slope.

surface soil: The soil at or near the surface, generally 5 to 8 inches thick.

subsoil: The part of the soil below the surface soil and above the parent material, in which the processes of soil formation are active.

Tertiary: Period of geologic time, approximately 3 to 65 million years ago.

treatment: In a livestock grazing system, one of the annually scheduled periods of grazing or resting applied to a particular unit of a grazed area.

turbidity: The relative clearness of water. It can be measured in Jackson Turbidity Units or Nephelometric Turbidity Units. In both units, the lower values (less than 25) signify clear water, higher values (25-100) indicate murky water, and highest values (more than 100), describe water which appear dense.

unconsolidated detritus: A deposit of material, produced by the disintegration and weathering of rocks, that has been moved from its site of origin.

unit resource analysis (URA): A comprehensive display of physical resource data and an analysis of the current use, production, condition, and trend of the resources, their potentials, and opportunities for management within a planning unit.

utilization: The proportion of current year's forage production that is consumed or removed by grazing animals. Usually expressed as a percentage.

vegetation: Plant life or plant cover in an area.

vegetation zone: A broad area characterized by one dominant kind of vegetation. For this ES zones were named by the dominant sagebrush species, riparian vegetation or lava flow characteristic. A vegetation zone may include several ecological sites.

visual contrast: The difference in appearance between a viewed resource and its surroundings.

visual resources: The land, water, vegetation, animals, and other features that are visible on all public lands.

visual resource management classification: Categorization of visual resources based on scenic quality, visual sensitivity, and visual zone in order to accomplish appropriate management of the visual resource.

visual sensitivity: An index of the level of response to visual resources in an area based on such weighted criteria as social attitudes, types of resource uses, and management policies. Levels are classified as high, medium, or low.

watershed: The region draining into a river, river system, or body of water.

water yield: The total surface and subsurface water produced from an area after evaporation losses and inflows have been accounted for. It is calculated by subtracting consumptive use from precipitated or by subtracting inflows (surface + ground) from outflows (surface + ground).

wilderness: An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or habitation, which is protected and managed so as to preserve its natural conditions.

wilderness characteristics: Qualities of a wilderness as defined in Section 2(c) of the Wilderness Act of 1964, which include (1) generally appearing to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) having outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) having at least five thousand acres of land or being of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) perhaps containing ecological, geological, or other features of scientific, educational, scenic, or historical value.

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SHOSHONE ENVIRONMENTAL STATEMENT IMPROVEMENTS

EXISTING AND PROPOSED